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PAPER TRADE JOURNAL

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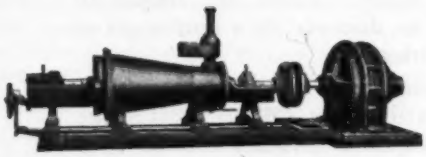

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PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-FIFTH YEAR

Published Every Thursday by the

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Vol. LXXXIII, No. 18 — Thursday, October 28, 1926

The Magazine of the Paper Industry

Conservation And Efficiency In Paper Making

If It Were Possible to Measure by Some Yardstick the Advance Made Along Lines of Conservation During the Past Five Years It Would Undoubtedly Be Found Far Greater Than for Any Similar Period Since the Introduction of Paper Made From Wood

By Vance P. Edwardes, Madison, Wis.

Gifford Pinchot once said: "Conservation does not mean the holding back of production, it does not mean hoarding. What conservation does mean is the wise use of whatever is to be conserved. The conservation of natural resources which have been given to all the people by the Almighty means their use in a way that will benefit the greatest number of people for the longest possible time." This common sense view of a much discussed subject is one in which most modern industrialists would agree. It represents an ideal which the pulp and paper industry, in particular, is working hard to realize.

Recent progress has been noteworthy. If it were possible to measure by some yardstick the advance made along lines of conservation during the past five years it would undoubtedly be found far greater than for any similar period since the introduction of paper made from wood. Starting with the industry's most important raw material, wood, and following it from the woods operation to the finished paper, the forest conservationist will find a number of late developments decidedly to his liking.

Undoubtedly a shortage of pulpwood of coniferous species is on its way, but may it not be possible by broadening the basis of supply and improving operation to delay or even avert the worst of the stringency?

Waste Utilization

Probably one of the most spectacular means of reducing the demands upon our forests is by the utilization of saw mill and planing mill refuse in the manufacture of pulp. Although it may not be economically feasible in certain localities, the possibility of obtaining pulpwood chips from waste is, to say the least, attractive. Illustrative of the tendencies, several manufacturers, sulphate and sulphite, on the Pacific Coast and in the South, are now either operating or building mills which depend upon sawmill waste for their wood supply. These particular mills are within close reach of sawmills; but in Wisconsin a sulphite mill receives a goodly part of its pulpwood in the form of chips shipped in box cars from a sawmill located some 300 miles distant. While it may be impossible to convert all the sawmill waste of the country into pulp, nevertheless with these leaders showing the way it can not be long before others as favorably situated will follow. Nothing succeeds like success, nor does anything appeal more to the plant owner than that which adds to his income.

The wood substitute field has never been more active than the last two years, as evidenced by the rapid growth of products made from wood waste, gypsum, flax, and sugar cane. Although in most cases these products are lumber substitutes rather than pulp in the strict sense, their increasing use will necessarily have a bearing upon forest management plans and timber production. The Cloquet, Minn., plant of the Weyerhauser interests is an outstanding example of the complete utilization of forest products through a close coordination of the operation of the sawmills, pulp and paper mill, box factory, and wood conversion plant, which latter produces the insulating material known as balsam wool. This operation is a real example of conservation as above defined, and not the least feature is the fact that it is planned to continue on a perpetual basis.

The method recently developed by the Mason Fiber Company, of Laurel, Miss., in utilizing sawmill refuse from yellow pine operations has been attracting a great deal of attention.[1] Descriptions of the process have appeared in various trade journals, but the idea is so novel that it is worthy of repetition. The hogged mill waste is subjected to steam pressure from 300 pounds to 600 pounds per square inch for less than a minute in, of course, comparatively small vessels. The total cycle time for one charge is slightly less than one minute, and at the end of that period the chips are explosively discharged against a baffle. In addition to the effect of mechanical impact, the steam pressure within the chips disrupts them into fiber bundles. The resulting pulp is formed into boards and pressed into sheets more or less dense according to the steam pressure used in the pressure vessels and the hydraulic pressure used in forming the board. A wide variation of boards can be obtained by this process.

Closer Utilization of Pulpwood Species

Western pulp mills logging their own lands have found it profitable to re-log after removing the largest timber when the cost of opening the tract has been borne by the larger material. In other cases a far more complete utilization of the tree is made by taking the saw timber available for lumber and the thinnings, rejects, tops, and even the branches, for pulp. One large company now operating a sawmill in a southern state, is seriously considering a division of its cut on approximately 50-50 basis between the sawmill operation and a proposed pulp mill with a view to preventing the occurrence of any waste and thus making perpetual operation possible.

The latter method has much to recommend it, particularly when the enormous saving made possible through operations of this character is considered. In the Scandinavian countries it is com-

1 U. S. Patent 1,578,609. *See* Paper Trade Journal, July 15 and Aug. 19, 1926.

mon practice to operate pulp mills, sulphite and sulphate, in conjunction with sawmills. Surely if, with their cheaper wood costs, it pays to coordinate their wood using industries in that way, the prospects for financial gain for those following the same plan in the United States should be far greater. One large mill in Sweden using knife barkers sends the first cut, containing the bulk of the bark, to the boiler house, and the second, or cleaning cut, to the sulphate mill.

Investigations made with the cooperation of the industry at the Forest Products Laboratory two years ago indicated the possibility of using partially decayed woods in the production of both bleached and unbleached sulphite. Actually the results now being obtained in operation are better than were anticipated, and at least two large companies producing news print have been salvaging the partly decayed wood upon their lands. In one case the timber is being reclaimed from a burn and in the other from areas killed by the spruce budworm.

Use of Species Not Now Extensively Used

1. By Customary Methods

A few species of wood not commonly considered as suited for pulp making are now being utilized to a small extent as substitutes for spruce in the production both of groundwood and sulphite by the accepted pulping methods. More extensive use can possibly be made of such species. It has been found possible to use jack pine in the production of both groundwood and sulphite papers, particularly for conversion into news print, to the extent of at least 10 per cent without running into pitch difficulties. Hardwoods such as aspen and birch can also be used in both groundwood and sulphite as a substitute for spruce up to possibly 25 per cent in amount. Unfortunately, wider use of these species is too frequently prevented by the attitude of the operative staff, and in promoting their use the matter of education cannot be overlooked.

2. By New Methods

For several years the Forest Products Laboratory has been engaged in a study of the chemistry of the alkaline pulping processes. In fundamental work of this character it is often impossible to foresee any immediate application at first. The reaction of the various pulping agents upon the woods has been studied in detail, and out of this study has grown what is now termed the "Semi-chemical" method of pulping.[2] The term "semi-chemical" has been adopted because the wood is subjected to only mild pulping action just sufficient to weaken the bond cementing the fibers together and not drastic enough to dissolve much of the lignin, let alone the stable and unstable cellulose. This treatment results in a product—it can hardly be called pulp—which consists of softened chips. The next problem was to find some means of disintegrating the chips. In the rod mill, which has been adapted from the mining and cement industry a machine has been found which seems particularly suited to the reduction of lightly treated wood into a pulp suitable for manufacture into paper.

It has been found that the semi-chemical process is especially suited to the hardwoods. While the study has not covered the full range of available woods, aspen, cottonwood, birch, tupelo, black and red gum, and maple have been treated to yield a satisfactory product. The yield obtained is in the neighborhood of 85 per cent, air dry, and for this reason and because of the small amount of chemical used, the conversion cost is low. The adaptation of the process, particularly to the fast growing hardwoods of the South, opens up a field of indefinite possibilities. The quality of the pulp obtained has characteristics which point to its ultimate use in the manufacture of print papers without, in some cases, the addition of any long-fibered pulps, and it is entirely possible that the next ten years may see a movement of the news print industry toward the South, leaving the higher priced northern conifers for the better grades of paper.

2. A Semi-Chemical Pulping Process. John D. Rue, Sidney D. Wells, Frances G. Rawling and Joseph A. Staidl. Paper Trade Journal, Sept. 23, 1926, p. 50.

By the semi-chemical method of pulping it is entirely possible by using mixtures of hardwood mill waste to obtain a product satisfactory for the construction of shipping containers. So far, however, the coniferous woods do not seem to be well adapted to this particular method of pulping, although further investigation may disclose a new method of attack.

As an immediate result of the development of this method, the Southern Extract Company, of Knoxville, Tenn., has been successfully reducing extracted chestnut chips to pulp and producing a very satisfactory grade of board which has been admitted by the Railroad Specifications Committee for use in corrugated shipping containers in the place of straw board. Several other installations utilizing the same method with different hardwoods are now under way and the spring of 1927 should see them in operation.

The history of the production of kraft pulp has shown a decided tendency toward better cooked pulp and lower yields. The reason may possibly be found in the high cost of reduction of the harder pulp by kollergangs. Nevertheless it now appears possible to produce a kraft pulp with a yield over 65 per cent, air dry, which after treatment in the rod mill will make up into an extremely strong sheet suitable either for wrapping or solid containers.

3. By Modification of Existing Methods

Although numerous partially successful attempts have been made to pulp more or less resinous woods by the sulphite process, as evidenced by the limited use of jack pine and loblolly pine, an entirely satisfactory product has not yet been obtained. Probably the most successful experiments to date along this line have been those of Alfthan and Serlachius in Finland, who have succeeded, through the substitution of sodium for some of the lime in the sulphite cooking acid, in producing a much better grade of pulp from resinous woods than was formerly possible. It can, of course, be pointed out that such a substitution is costly, but the new development, when considered in its relationship to the recovery of waste sulphite liquor, may have an important bearing upon the whole problem of pulping.

Greater Production From Pulp Wood

The following discussion deals with methods of increasing the yield of pulp from a given amount of wood after it reaches the mill yard.

1. By Improving Pulp Producing Methods

As the development of the semi-chemical method of pulping was the direct result of fundamental research, so are recent modifications of sulphite pulping the direct result of years of painstaking research into the chemistry of the process.

It has been proved beyond a doubt that the quality of sulphite pulp produced is dependent almost entirely upon the rate of digester temperature rise. The pulp can very readily be injured during the first portion of the cook, after the liquor has penetrated the chips. Studies at the Forest Products Laboratory have led to the development of certain definite temperature curves for the production of news, strong, and easy-bleaching sulphite pulps. The same general principle of a slow temperature rise after the digester has reached 110° C. followed by a rapid rise toward the end of the cook applies in all cases. By modifying the temperature curve, but without lengthening the time, pulps of better quality have been obtained than is possible by following the common practice of raising the temperature rapidly at first and flattening off the curve during the last few hours of the cook. Not only has the quality of the pulp been improved from the standpoint of strength, color and bleachability, but the yields have been increased by as much as ten per cent. That means that instead of obtaining 50 per cent air-dry pulp, it is now possible to obtain practically 55 per cent of pulp superior in quality. In some mills where the modified temperature curve has been adopted, yields as high as 58 per cent of air-dry pulp of news grade are reported.

A sufficient number of mills both in the United States and in Canada have adopted the new temperature method to prove in this case at least, the soundness of the results of fundamental research

when intelligently applied to operating conditions. The effect of producing 10 per cent more pulp but using only the same amount of wood has an enormous bearing not only on better utilization but also on plant operating costs.

2. By Improving Wood Yard Operations

Some years ago, in an attempt to overcome losses due to poor storage conditions, the Forest Products Laboratory made an extensive study of the wood yard practice of many mills. As a direct result of this study conditions have been improved in the mill yards of many companies, and an estimate of the saving accomplished places it in the neighborhood of five per cent.

3. By Preventing Decay of Stored Pulp

Almost simultaneously with the study of wood yard conditions an investigation was made of the causes of the decay of stored pulp, particularly ground woods, with a view to discovering means of preventing the growth of decay organisms. While the results of this study have not yet been generally adopted in the industry, such mills as are following the recommended procedure find that at little additional cost for preservatives it is possible to store groundwood for six to nine months without incurring any loss in quality or quantity through either fungus or bacterial action.

4. By Prevention of Fiber Losses in Manufacturing Processes

The subject of fiber losses in machine white water has achieved such prominence during the past few years that it is hardly conceivable that the industry is at a loss to find ways and means of preventing this waste. Surveys of the pulp and paper industry in the United States have indicated the average loss of paper-making fiber in white water to be well in the neighborhood of ten per cent. Through the development of special equipment or its adaptation from other industries, progressive mill operators have been able to reduce this loss in some cases to as little as 1½ per cent. Assuming a total production of paper within the United States of seven million tons a year, accompanied by a loss of 700,000 tons through machine white water, the gold mine which awaits the manufacturer who has not yet taken advantage of latest developments is plainly indicated. As with many other innovations in the pulp and paper industry, those who formerly had said that fiber could not be economically recovered from white water, and, further, that after it once was recovered it had no value, are now among the strong promoters for the installation of proper white water recovery systems.

Improved Technique

In addition to recent developments which have a direct bearing upon the conservation of raw materials, new procedures have been developed in the technique of manufacturing of pulp and paper which are of importance.

1. The Rod Mill

The rod mill[3] has already been mentioned as being an important piece of equipment in the production of paper from woods pulped by the semi-chemical process. Its introduction in this field came from the need for some equipment which would reduce the softened chips to a proper condition for paper making without damaging the fiber or cutting it to any degree, and at the same time consuming a small amount of power. In adapting the rod mill for the purpose of preparing pulp no change was made from its use now prevailing in the mining industry except that it was found advisable to rotate the mill more slowly. In the commercial installation at the plant of the Southern Extract Company, already mentioned, the mill is 6 by 12 feet inside dimensions, carries a charge of approximately 25 tons of iron rods about 2½ inches in diameter and 11½ feet long, and is rotated at a speed of 13 revolutions per minute. The pulp is fed continuously through the trunion at one end and a stock consistency of four to six per cent is maintained in the mill. The output is 12 to 14 tons per 24 hours at about seven horsepower days per ton.

3. Rod Mill in the Pulp and Paper Industry. John D. Rue and Sidney D. Wells. Paper Trade Journal, Sept. 16, 1926, p. 53.

From experiments made with a smaller installation at the laboratory, it is apparent that the rod mill has an application in the beating of stock. A very satisfactory sheet of glassine paper has been made from bleached spruce sulphite which has a better quality than commercially made glassine. As very little is yet known of the rod mill characteristics, a study is being made to discover the effect of such variables as weight of the charge, speed of the mill, and consistence of the pulp upon the product. Even at the present state of knowledge, the use of the rod mill as a beater is worthy of very serious consideration by all mill men.

2. Direct Burning of Concentrated Black Liquor

This feature of recovery has received a great deal of attention during the past year, and at least two installations, one on soda and one on sulphate, are known. Although the installations are more or less experimental in nature, the reports are optimistic, and it is quite possible that within a short time most mills will be equipped with the necessary combustion apparatus. It has been proved entirely possible to operate a mill on the heat recovered from burning the concentrated black liquor in this type of furnace. In fact, one of the first difficulties encountered in the experimental plant operation was the enormous amount of waste heat developed, far greater than the available equipment could handle.

Taking the Odor Out of Sulphate Mill Gases

While possibly the problem is not as important as others which have been mentioned, advances have been made in perfecting an odorless sulphate mill which will probably be of more interest to the people in the immediate vicinity than to the mill men.

It has been found that when the Nordstrom chip drier is operated in connection with a sulphate mill and the incinerator gases used for drying the chips or waste woods, the distinctive sulphate odor is taken up by the chips, leaving the gases practically odorless.

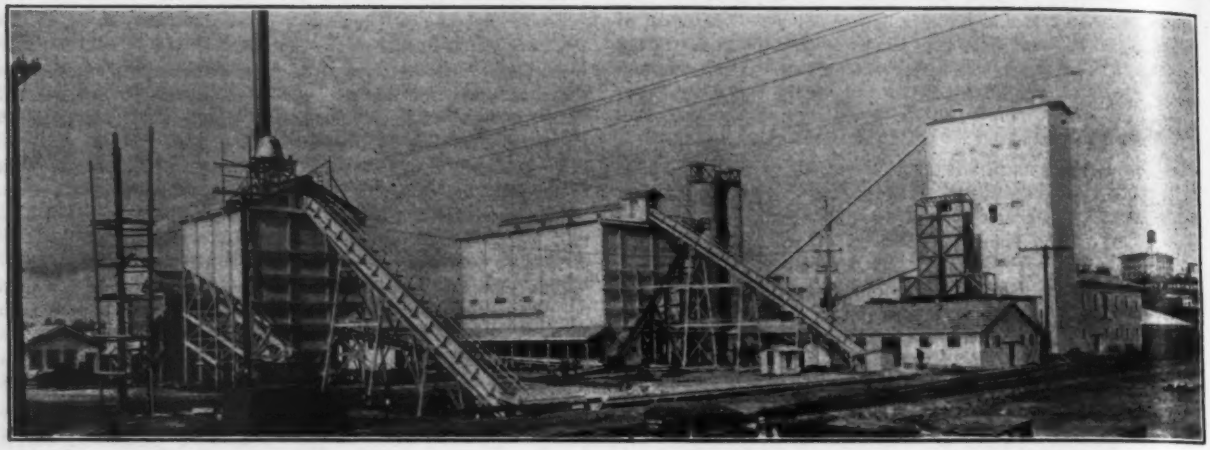
Experiments have also been made with a view to burning the objectionable gases in order to destroy the odor, but this scheme is still in the experimental stage. The difficulties lying in the way are, of course, extreme dilution and the danger of forming an explosive mixture in the burner.

Waste Sulphite Liquor

Very closely allied to the prevention of fiber waste is the prevention of discharge of waste sulphite liquor into the streams. The deleterious effect of waste sulphite liquor upon the streams has been known for a long time, but qualitatively rather than quantitatively. A great impetus was given to investigation and correction of conditions through the Wisconsin Railroad Commission's investigations into the situation which existed on the Flambeau River in July, 1925. Since that time much work has been done in determining just how and to what extent waste sulphite liquor affects the stream and stream life. During the past summer the mills of Wisconsin, in cooperation with the State Board of Health, have made tests of the water at various stations along the rivers in order to determine the actual stream conditions over the most critical period of the year. The investigations are as yet incomplete, but much more information will be available on which to base future action than was formerly the case.

The question of waste sulphite liquor utilization is one which has long baffled investigators. About a year ago at the Floriston plant of the Crown-Willamette Company, there was installed a new type of evaporator for concentrating the liquor preparatory to burning it. The evaporator operated more or less successfully, but combustion difficulties have thus far made the process as a whole impracticable.

More recently a new type of evaporator has been developed in which very high thermal efficiency is secured by forcing the liquor through the heater tubes at high velocities. While this new evaporator has run probably 150 hours continuously without any indication of corrosion or scaling, it is impossible to predict the actual results over a period of months. Further, a large paper mill in the New England States is going to heavy expense in cooperation with a manufacturer of evaporator equipment, to erect a commercial evaporator unit at its plant. So, in general, the out-



NEW SULPHITE PLANT OF SAN JUAN PULP MFG. CO., BELLINGHAM, WASH.

look for successfully evaporating the waste sulphite liquor is far more promising than it was even two years ago. It will be too much to expect, however, that the mills will be able to work out the problem in a few years regardless of whether it is desired to use the liquor as a fuel or to recover chemical products from it. Doubtless the latter will be the ultimate outcome, but that time is still far off.

With the possibility of assisting in the solution of the waste sulphite liquor problem it has been suggested that sodium be substituted for lime in the cooking acid. The use of this more expensive chemical would, of course, require a recovery system. No work has yet been done on the recovery phase of the problem. It has been found, however, that a very satisfactory pulp can be secured by this modification, as mentioned earlier in this article.

Bleaching

Until recently comparatively low densities have been used in the pulp industry for bleaching. Within the last few years, however, high density bleaching has made rapid strides through the development of equipment designed to procure a thorough mixing of the pulp and bleach liquor. This may be obtained in various ways and a number of bleachers are now available in which the stock density is above twelve per cent. It has been found unnecessary in these systems to heat the pulp and appreciable savings in power, steam and bleach liquor are obtained. A peculiar feature of high density bleaching seems to be the ability to bleach out the dirt occurring in the pulp and indications are that a saving of bleach consumption is made possible, particularly when it is desired to reach a bright color.

Two stage bleaching has been advocated for some time and it has been shown experimentally that certain advantages accrue from the use of such a system. But two commercial installations, as far as is known, are operating on this principle, but very beneficial results are claimed. The pulp is first treated at high densities with such an amount of bleach liquor as will be exhausted almost immediately. The chlorination products are then removed by washing after which the pulp is given the final bleach either at a high density or in a Bellmer.

Unquestionably important developments in the technique of pulp bleaching will be soon forthcoming for many investigators are engaged in studying the fundamentals affecting the bleach reaction.

San Juan Pulp Mfg. Co. Starts Sulphite Mill

The plant of the San Juan Pulp Manufacturing Company at Bellingham, Wash., consists of buildings for an eighty ton capacity sulphite pulp mill, although the machinery installed is only for forty tons, that is, two 15 x 49 digesters, Jenssen cooler and Thune screens imported from Norway.

The plant is situated within two blocks of three of the world's largest spruce and hemlock box shook mills and it utilizes the surface cleaned dry waste ends from these box shook factories, consisting of about 60 per cent spruce and 40 per cent hemlock. The company will make unbleached high grade Fidalgo brand sulphite, the same that is now being manufactured at the other plant of the company at Anacortes, Wash. The pulp will be shipped air dry, whether for export or domestic markets, made up in bales from about 200 pounds each. The pulp will also be shipped either in the shredded form, which is the company's standard method, or in sheet form.

The buildings of the plant consists of all concrete foundations, steel and wood construction.

The drying method consists of what is known as the Fidalgo shredded drying and baling system, whereby the pulp is run through a wet machine, then shredded and is then conveyed through a drying chamber 116 feet long coupled on to a hot coil chamber containing 30,000 square feet of coils and a rapid fan circulating system. This hot air is circulated up and down through the pulp on its course through the chamber by means of impinging baffles and thus the pulp is never put in contact with any hot rolls and preserves its original strength and makes a nice easy beating product.

Additional Power for J. & J. Rogers Co.

The J. & J. Rogers Company, Ausable Forks, N. Y. has made considerable provision for additional power for its paper mill and sulphite pulp plant.

A new hydraulic station is in the course of erection at Ausable Chasm, fifteen miles down the river from the Ausable Forks plant, which will be known as the Rainbow-Estes Plant.

There are three units, 1500 K. W. each, S. Morgan Smith water wheels, operating under 104 ft. head. The electrical equipment is General Electric.

In addition to furnishing its own power the company, will also furnish power to the Northern Adirondack Power Company, a subsidiary of the J. & J. Rogers Company, furnishing power throughout the Ausable Valley.

The dam is approximately 540 feet long, 20 feet high in the highest part. The penstock is 360 feet long, 6 feet in diameter. One unit is in operation; the other two may be installed next year.

In addition the company has also erected a dam ten miles above its mill, on a lake known as Taylor Pond, which gives it a reservoir four miles long, by from one-half to one mile wide, and will furnish sufficient storage to take care of the new plant as well as our powers at Black Brook and Ausable Forks.

I.P. Now Running Eight Machines at Three Rivers

Largest and Most Modern Mill of Canadian International Paper Co. Has Capacity of 700 Tons of News Print Daily—Every Application of Power Is Electrical—Plant Has Forest Reserves of 3,642 Square Miles For Pulpwood Requirements

With a capacity of 700 tons of news print a day, the Three Rivers mill of the Canadian International Paper Company, a subsidiary of the International Paper Company, is now one of the largest paper mills in the world. The Three Rivers mill stands at the confluence of the St. Lawrence and the St. Maurice Rivers, eighty miles below Montreal.

On August 25, 1919, the Duke of Devonshire, then Governor-General of Canada, started the construction of the mill by turning over the first spadeful of earth, and in August, 1922, all four news print machines were turning out news print.

Recently it was decided to add four additional news print machines, making eight in all. Work was begun in December, 1924. The first two new machines came into operation in February and March, and the last two in May of this year.

Machines Driven by Worm Gears

The four new machines are designed for normal operation at a rate of 1,200 feet a minute and for a maximum speed of 1,440 feet a minute. An innovation is the use of worm gears to drive the machines.

One of the outstanding features is that every application of power is electrical and that it is one of the few 100 per cent electric paper mills in the world. The original contract for the electrical equipment was the largest contract of the kind up to that time ever awarded in Canada.

Not only does the St. Maurice River bring down pulpwood from the company's forests and furnish the power that runs the mill, but it brings down the large supply of fresh water which is necessary for operation. For purifying its water and so insuring the cleanness and bright color of the output of the mill, a pump and filter plant is installed at the river bank. The combined installed capacity of the pumps in the filter plant is 61,000 gallons per minute or more than enough to supply the city of Montreal.

New Dock Constructed

Along the St. Lawrence River and adjacent to the mill, the company has constructed a new dock and rebuilt the old one, giving a total of over 1,200 feet of dock. Ocean-going steamships of thirty feet draft can go up to the dock, thus allowing wood, coal, sulphur and other raw materials to be shipped in and paper to be shipped out seven months of the year by water.

In view of the high cost of fuel oil, the oil-burning boilers originally installed were recently replaced with larger boilers burning pulverized coal, and capable of ready adaptation to the use of fuel oil should changes in the relative market prices for coal and fuel oil render the change desirable. Operating steam plant costs, which after wood are one of the largest items of cost in the manufacture of news print, have in June, July and August of this year averaged less than 60 per cent of the same costs for the corresponding months of last year.

The Three Rivers mill is able to produce enough news print every minute to cover more than two acres, or enough every day to make nearly four million 24-page newspapers of standard size; and the daily output would make a strip of paper eight feet wide stretching from the Atlantic to the Pacific.

Photo by Fairchild Aerial Surveys of Canada, Grandmere, Quebec.

AIRPLANE VIEW OF THE THREE RIVERS MILL BEFORE ITS EXPANSION FROM FOUR TO EIGHT MACHINES

The daily production of paper of the Three Rivers mill averages over one thousand pounds per employee, while in the first paper mill built on the North American continent, in 1690, the average daily output per man for the three employees was about sixty pounds. Use of improved methods in manufacturing has been reflected in papermaking by increasing the average production per worker over sixteen times.

The first paper mill cost a few hundred dollars and supplied only the needs of a small community. The Three Rivers mill represents an investment in excess of twenty million dollars and its product goes to Great Britain, United States, Australia, the Argentine Republic and Cuba.

Vast Forest Reserves

The Three Rivers mill has forest reserves of 3,642 square miles from which to draw its requirements of pulpwood. It is the policy of the company to build mills only when and where a permanent supply of pulpwood is assured for the mill. Building or expanding mills beyond the capacity justified by available timber reserves is economically unsound.

The protection of forest resources against fire is of equal importance. Canadian International Paper Company is cooperating with governmental authorities and private associations in the matter of fire protection for its timberlands, and is engaged in much pioneer work on its own initiative. The company looks forward to a time when forest fires will be reduced to a minimum.

In all its work in Canada, Canadian International Paper Company gives preference to residents of Canada in employing labor, letting contracts and making purchases.

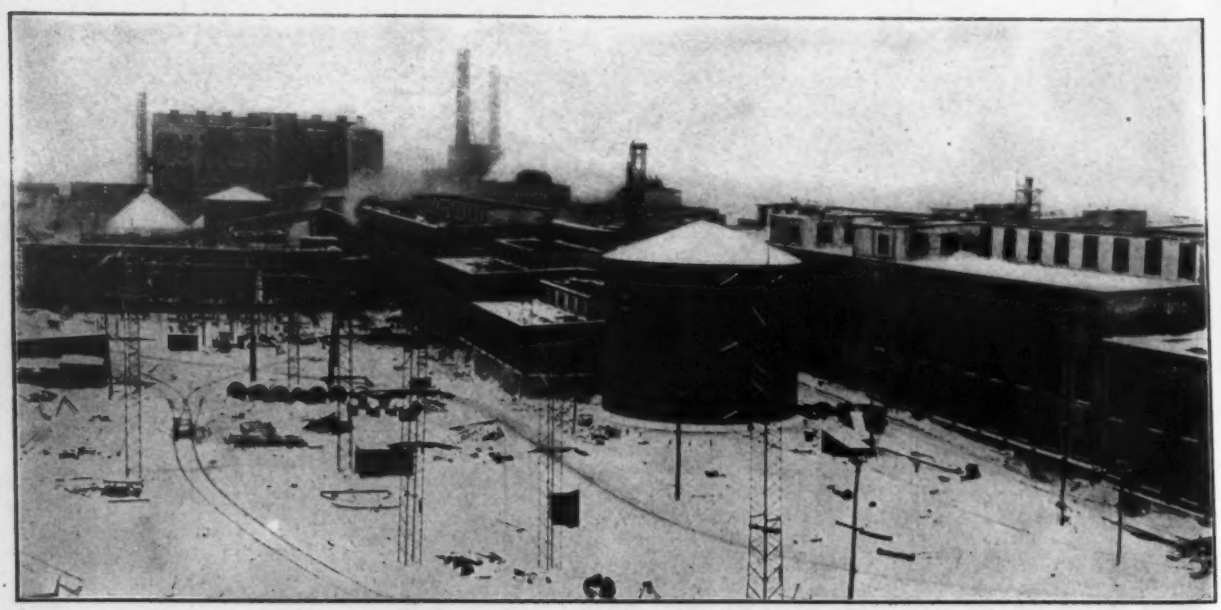
U. S. Gypsum Co. To Build at Kansas City

Contracts have been awarded covering the major portion of the machinery equipment of the new paper mill to be built by the United States Gypsum Company at Kansas City, Mo.

This mill will be very similar to their last mill located a year ago at Oakfield, N. Y., and will operate on their "Sheetrock" products the demand for which has outgrown their present facilities.

The paper machine contract has been awarded to the Black-Clawson Company of Hamilton, Ohio, and Dilts' new type beating engines, similar to those at Oakfield, will be used.

The contracts call for deliveries in January, 1927, and it is expected that the plant will be completed and ready for operation in April.



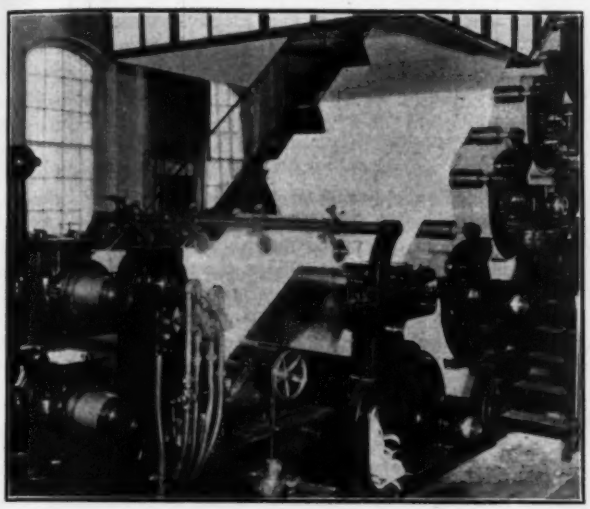
PANORAMIC VIEWS OF THE THREE RIVERS MILL

The upper view is looking north from the roof of the digester building and shows the recently completed addition to the mill. Piles of pulpwood are seen at the right. The lower photograph shows the original section of the mill and the digester building from which the upper view was taken.

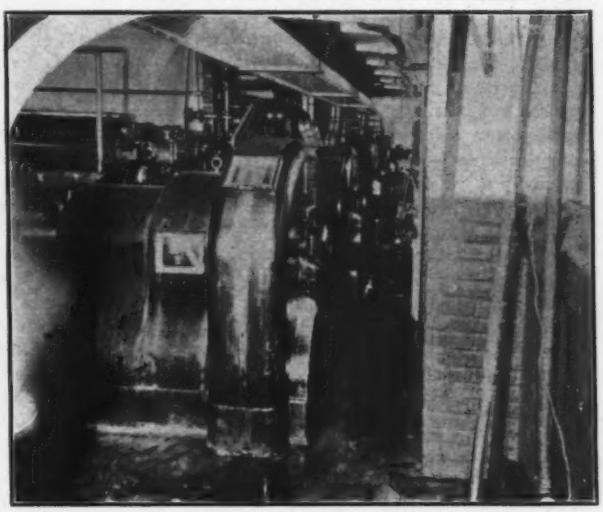
Keith Paper Co. Installs 86-Inch Fourdrinier

New and Entirely Untried Methods Resorted To Make Machine Fit in Limited Space Available Which Were Carried Out Altogether Successfully by the Builder, the Rice, Barton & Fales Co.—New Arrangement Brings Many Desirable Results

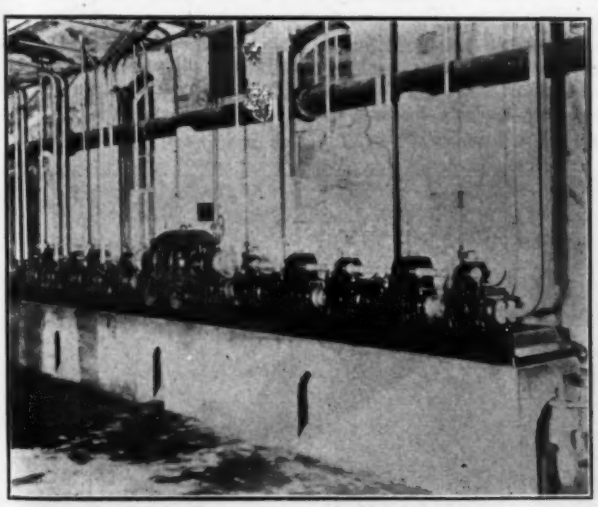
The new 86 inch Fourdrinier recently installed at its plant at Turners Falls, Mass., by the Keith Paper Company for the manufacture of high grade bond and ledger papers was built by Rice, Barton & Fales, Inc., Worcester, Mass. It consists of the customary Fourdrinier type for the manufacture of high grade bonds and ledgers. Specifications to the builder contained many minor improvements in paper making machinery besides the two major and novel ideas in the arrangement of dryers and method of applying the motive power.



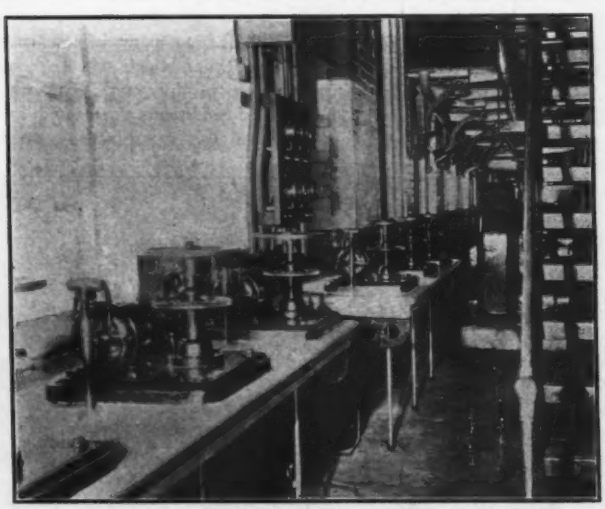
SHOWING PAPER WEB ON PYRAMID DRIERS



VIEW OF SECTIONAL DRIVES FROM WET END



OIL MOTORS LOCATED UNDER MACHINE ROOM



MOTOR-OPERATED CONTROL HEADS FOR SECTIONAL DRIVES

To make it possible to install a machine twenty-four inches wider and much longer, in the space heretofore occupied by an old and much smaller machine, drastic measures had to be resorted to, that were entirely new and untried. To get the machine within the limited space available, every part had to be as closely assembled as possible and still prove workable.

It appeared possible to make the greatest gain in space with reference to length of room, by an unusual and novel arrangement of the dryers, and after a very careful study of the possibilities the dryers were eventually arranged in pyramid form with the apex of the triangle at an angle of 45° with the base line. This has eventually proven a most desirable arrangement, not alone from the necessary economy in space, but many desirable results in the manufacture of high grade papers.

Inside and under the many paper dryers ample room is available for felt dryers and all the other felt carrying rolls, automatic stretcher, guides, etc. An important advantage is the unobstructed

path of the moisture rising from the dryers to the ventilators, and the complete elimination of steam pockets as effective in the horizontal double and triple deck assembly of dryers. Furthermore, there is but one dryer felt needed, which is at all times below the web of paper, and is returned from the dry end to the wet end over rolls and dryers located between the frames and under the main deck in such a manner that all parts are accessible and the dryer felt properly conditioned for further drying of paper. The improved conditions of drying, such as the elimination of cockling, blistering, etc., have been entirely eliminated and amply justify the radical change from the customary practice.

After very careful study, it was decided to adopt as a motive power, oil pressure as developed by the Waterbury Tool Company in their Universal Hydraulic Variable Speed units. The application of this motive power by sectional drives as developed by the engineering department of the Keith Paper Company has proven most advantageous, not only in limited space occupied but also in accurate and unlimited control. This installation has entirely abolished the use of the so called constant and variable speed lines, and has resulted in a practically beltless machine.

A complete oiling and filtering system is provided for all of the sectional drives and the primary drive, whereby the oil is carried by gravity to the oil regulating valves and thence to the bearings,—the waste oil then goes to a central filter and separator and then to a clear oil storage tank.

Push buttons for raising and lowering the speed of each section independently for correcting draw between machine units, are conveniently installed on the tending side of the machine frames at vantage points. A master control push button station is so located that the operator can read the electric driven tachometer when the machine speed is raised or lowered, this tachometer being graduated in feet per minute and driven from the sectional dryer drive.

Penobscot Chemical Fibre Co. Improvements

The Penobscot Chemical Fibre Company, Great Works, Me., is building an entire new roof on its soda pulp mill drying room which will not interfere with production. The new roof is being built over the old one and the old one will be torn out when the new one is completed.

Adjacent to the sulphite pulp mill, the company is constructing a new building to house a large Riffler which will be completed and in operation before the close of this year. The company has also installed a number of additional, new and improved screens in its sulphite mill. All this work is being done, of course, with the view of improving the quality of its bleached sulphite. The company is also making some improvements to its sulphite mill drying machine to increase its capacity as an additional digester which will increase daily production is contemplated as soon as the present improvements are completed.

The company's sulphite mill has run without interruption at 100 per cent capacity since September 1921. The company usually curtails the soda pulp mill somewhat during the summer months, but for the past two years, this has not been necessary due to the exceptionally high quality of soda pulp it has been making and the growing demands for it. The soda pulp mill has been run 100 per cent full for the past two years. The company's production for the market is about 75 tons of soda pulp and 65 tons of bleached sulphite per day.

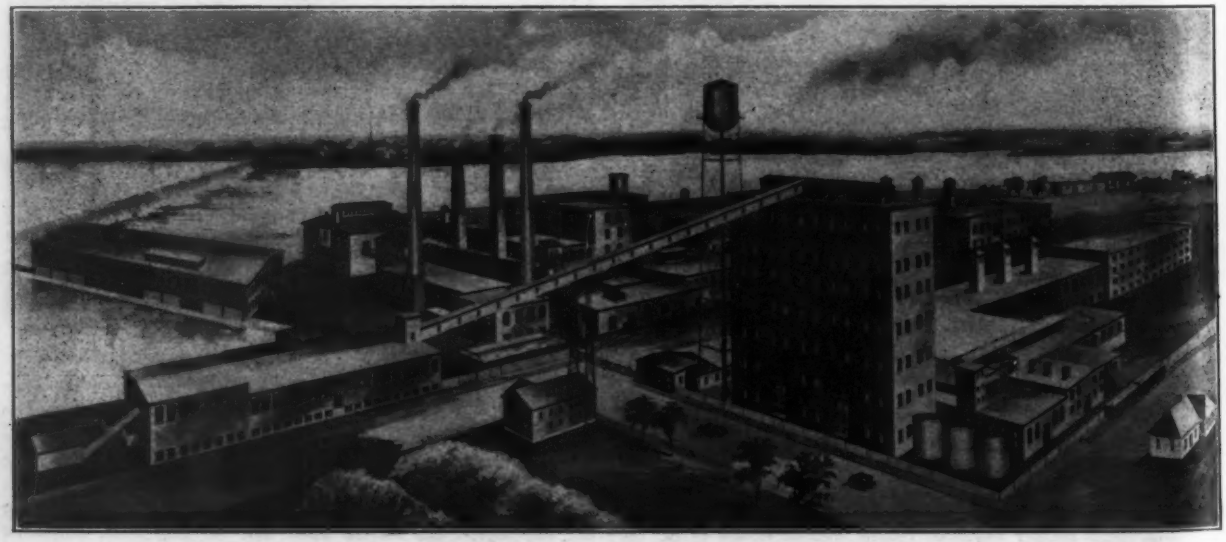
Longview Fibre Co. Lets Contracts

The Longview Fiber Company, Longview, Wash., has already let five preliminary contracts on its recently announced $2,500,000 paper plant project. The Olympic Construction Company has the clearing of the site. The Hart Construction company will prepare the pile foundations for the mill. Other contracts are the drilling of the site to determine what load it will carry, and the dredging and paving of the roadway in to the grounds. This roadway is 3700 feet and will be 20 feet wide. In the filling it has been determined that about 85,000 cubic yards of fill will be necessary. W. E. Dodge, construction superintendent announced that as soon as the tests are made on the foundation work the report will be forwarded to the engineers of the company in Wisconsin who will then immediately start work on the building plans.

To Make News Print From Eucalyptus

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 25, 1925.—A Brazilian paper company is planning the construction of a mill to manufacture news print paper from eucalyptus wood, according to Consul Walter Thurston, Sao Paulo, in a report made public by the Department of Commerce. The company owns large tracts of eucalyptus in the State of Sao Paulo and will build its mill at Villa Americana, about 150 millimeters inland from Sao Paulo, where the water supply is suitable. Further details concerning this project are not yet available, but it is expected that the equipment will cost approximately $750,000.



PLANT OF PENOBSCOT CHEMICAL FIBRE CO., GREAT FALLS, ME.

St. Helens Pulp & Paper Co. to Start Soon

Plant Is Equipped With One 168 Inch Beloit Iron Works Fourdrinier With Many Improvements, Which, It Is Said, Makes It the Finest Machine of the Kind In the World—Plant Expected To Be in Operation on No. 1 Kraft Paper by End of Year

Ground for the new sulphite pulp and Kraft paper mill of the St. Helens Pulp and Paper Company at St. Helens, Ore., was broken January 15 and it is expected that the mill will turn out paper before the end of this year.

Property Comprises Thirty-five Acres

The property of the company comprises an area of thirty-five acres, most of which is solid rock and which afforded an excellent foundation for the buildings. There is no rock, however, along the water front so that piling couid be driven for the necessary docks. The property is located on tide water so that material can be received and shipped on ocean going vessels. The mill is also connected with the S. P. & S. Railroad and has, therefore, the advantage of both water and rail shipments.

To Use Fir Slabs from Near-by Saw Mills

It is intended to use fir slabs from near-by saw mills for the production of pulp, although the mill is also fully equipped for handling logs so that it will not be dependent on the refuse from the saw mills.

Near-by saw mills will also furnish hog fuel for the production of steam. This hog fuel will be transported from the saw mills to the paper mill on barges. A clamshell bucket suspended from a stiff-leg derrick and operated by an electric hoist will discharge the hog fuel on to a belt conveyor which will transport the fuel to a large storage pile with a capacity for about 20 days' operation. From the storage pile the hog fuel is brought by means of conveyors into the boiler house and discharged by gravity through steel chutes into the Dutch ovens of the boilers.

Boiler House Equipment

In the boiler house are installed four Erie City, Sterling Type, boilers suitable for 250 lb. pressure and the boiler setting is so arranged that either hog fuel or oil can be fired. The gases from the boilers discharge into a 300 foot smoke stack, which will also take away the gases from the recovery. The smoke stack has an inside diameter of 14 feet on top and is built of concrete and brick lined throughout. It was built by the Rust Engineering Company, Pittsburgh, Penn.

Two separate woodrooms have been erected—one with the idea of cutting up slabs only, which will be shipped in on railroad cars, and the other one has been built close to the river bank for the cutting up of logs and also slabs which may be transported on barges on the river.

Digester House

The digester house is designed in the usual manner with a 24 hour storage bin above the digesters, which are of the welded rotary type.

Diffusers have been installed for the washing of the pulp, and the screen room is equipped with Voith centrifugal screens. Woods decker machines discharge the thickened stock into a pulp chest which is located between the wet machine room and beater room.

The Beater Room

In the beater room the stock is being pumped to the beaters.

The beater equipment consists of ten Patent Horne beaters equipped with lava stone beater rolls and bed plates; also two Horne jordans driven by synchronus motors.

The Paper Machine

The paper machine has a width of 168 inches and was furnished by the Beloit Iron Works, Beloit, Wis. The paper machine has a removable Fourdrinier, oscillating suction boxes, Aldridge shake and all the many other improvements which have been made by the Beloit Iron Works and which makes this machine, it is said, the finest in the world.

The paper machine is being driven by a variable speed steam turbine and the constant line is driven by a constant speed steam turbine, both furnished by the Terry Steam Turbine Company, Hartford, Conn. The exhaust from both turbines is used for drying the paper.

The finishing room has a full trim Moore & White cutter and layboy with Mamco counter and marker and also an 84 inch Seybold trimmer.

Power and Water

The electric power required for the operation of the mill is furnished by a 1,500 kw. bleeder type General Electric turbo generator from which steam will be extracted for various purposes in the process.

The necessary mill water is obtained from the Multnomah Slough of the Columbia River and which, after the water has been screened, is of excellent quality for the manufacture of pulp and paper.

To Make No. 1 Kraft

The capacity of the mill is 50 tons of strictly No. 1 Kraft paper.

The buildings are of concrete and steel and of a fireproof construction throughout.

The company is headed by W. P. Hawley, president, Willard P. Hawley, Jr., vice-president, and Max Oberdorfer, engineer and general manager.

Provincial Paper Mills Improvements

The Provincial Paper Mills, Ltd., among other improvements at their Port Arthur mill this year, are increasing the ground wood production to a total of 100 tons per day and are installing a 165 inch Charles Walmsley & Co. paper machine for the manufacture of book grades of paper. This machine will have all the latest improvements and will be driven by a Harland electric drive with a turbine driven motor generator set.

The new buildings have been constructed by W. J. Trimble, of Toronto, Ont., and the engineering work has been handled at the plant with the company's own staff in conjunction with the Management Engineering and Development Company of Dayton, Ohio.

The plant was started as a fifty ton proposition in 1917, the first product being made in February of the following year. In 1922 the company installed its first paper machine, a 146 inch Dominion Engineering Works machine with a speed of 500 feet per minute and with a Harland Drive running on all grades of book paper, including a percentage of bonds and writings. The same year the company installed a 35 ton ground wood mill as the majority of papers manufactured were ground wood sheets.

The company at present produces approximately 75 per cent of the book papers made in Canada and has recently completed arrangements with the Provincial Government guaranteeing a sufficient supply of pulpwood to maintain the plant in operation for a minimum period of forty years.

The head office of the company is at 56 University avenue,, Toronto, Ont. Mr. I. H. Weldon is president and S. F. Duncan, secretary-treasurer. The local officials consist of A. G. Pounsford, general manager; A. G. Hinzke, general superintendent; L. F. Knickerbocker, paper mill superintendent, and C. A. Gardner, woods superintendent.

New Boiler Plant Erected At Wisconsin Rapids

Consolidated Water Power & Paper Co. Dismantles Old Boilers and Supplants Them by Up-to-date High Pressure Equipment—New Steam Station Will Consist of Four 800 H. P. Boilers and One 8,000 H. P. Steam Turbine—Will Operate This Year

A 5 centrifugal pump located at the Wisconsin Rapids Division of Consolidated Water Power and Paper Company, is now successfully throwing sulphite stock through a 10 inch cast iron pipe over a length of four miles to the Biron Division. The total elevation is approximately seventy feet. The stock is being pumped at a density of about .75% and thickened by means of deckers at the Biron end of the line. In this manner the total sulphite needs of the Biron Mill are being taken care of, amounting to approximately thirty-five bone dry tons per day. The undertaking has proved to be successful, having no apparent difficulty so far with any of the equipment. The pump runs smoothly and shows a pressure of approximately seventy pounds.

The new steam station at the Wisconsin Rapids plant will consist of four 800 h.p. boilers and one 8,000 h.p. steam turbine.

The new boilers, while carrying a nominal rating of 800 h.p. each, will have a continuous capacity of 2,000 h.p. each, making a total of 8,000 h.p. They are of the horizontal straight tube type and are being furnished by the Springfield Boiler Company.

Will Operate at High Pressure

These boilers will operate at approximately 425 pounds pressure as they are being built for a maximum pressure of 450 pounds. The temperature of the water and steam will be approximately 450° Fahrenheit. Superheaters will be installed in each unit for raising the temperature of the steam to 700° Fahrenheit, which is the maximum temperature for which steam turbines are being built to-day for commercial use.

An interesting feature of the installation is that the boilers will be turned end for end and the stokers installed under the low end. The distance from the operating floor to the bottom of the tubes at the low end is 16 feet and from the floor to the tubes at the high end is 21 feet. This will provide an exceptionally large combustion chamber under each boiler and will allow the complete burning of all combustibles in the gases generated by the stokers before striking the cold surface of the boiler.

Will Produce 2000 Horse Power Each

Westinghouse multiple retort stokers are being installed and are capable of burning sufficient fuel to produce 2000 h.p. of steam in each boiler continuously and have a maximum capacity of generating 2400 h.p. of steam in each boiler for a period of four hours. All of the stoker installations will be the same, and it will be possible to burn bark and wood refuse in any of the four furnaces.

Air and Water Economizers

Each of the boilers will be equipped with water economizers to be used for heating the water before it enters the boilers and for reducing the gas temperatures to 425° F. After the gases leave the water economizers they will pass through air economizers to further reduce the temperature.

The air that is heated in the air economizers will be used directly under the stokers. The heating of the air has two advantages. It decreases the temperature of the escaping gases, thereby reducing the losses of the boiler, and improves combustion in the furnaces.

Will Install Bark Dryer

A Nordstrom drying tower will be installed and will be capable of drying out the bark and wood refuse coming from the wood room, which will greatly facilitate the burning of the bark. This will be the first drier of this type installed in America for the treatment of wood refuse.

The turbine that will be installed is known as a 5,000 kw. double extraction unit, capable of developing continuously 6000 kw. or 8000 electrical h.p. with overload capacity for nearly 10,000 electrical horsepower for short periods of time. The steam coming from the boiler house at 425 pounds pressure and 700° F. total temperature is reduced to 125 pounds pressure by passing through a portion of the turbine. At this point there is an opening in the turbine for the extraction of steam at a constant pressure of 125 pounds. The steam extracted at this point will be used in the sulphite mill and wherever 125 pound steam is necessary.

A second opening is provided in the turbine for furnishing steam at 25 pounds pressure for use in the paper machines and heaters.

In order to provide a constant output of the turbine a surface condenser is being installed.

Will Operate This Year

The new boiler will be located in the old rossing plant which is now being enlarged. The turbine will be located in the present boiler house where Nos. 1 and 2 boilers are now located. It is expected that this entire plant will be in operation by Christmas time of this year.

Machinery for New Louisiana Pulp & Paper Co.

J. E. Cullen of Bastrop, La., has been spending some time in Chicago arranging final details and placing orders for equipment for the new mill of the Louisiana Pulp and Paper Company.

The contract for the paper machine has been awarded to the Beloit Iron Works of Beloit, Wis., and the beater equipment to the Dilts Machine Works, Inc., of Fulton, N. Y. The Dilts new type beating engines will be used.

Mr. Cullen has had long experience in the development and building of pulp and paper mills, and undoubtedly, this, his latest plant will contain the best machinery available and have many interesting features that will attract wide attention.

The new mill should be in operation in the early months of the new year. The South is surely forging ahead as a producer of paper and will bear watching.

New River Rouge Mills to Start Soon

Rapid progress has been made in the construction of the River Rouge plant of the Consolidated Paper Company, at Monroe, Mich. The buildings are practically completed; machinery is arriving and the work of installation going on rapidly and systematically. Several carloads of Dilts' beating engines are among the latest arrivals and their erection foreman is directing the work of installation.

Unless unforseen delays occur the new mill will be ready to make paper in December and will add materially to the tremendous tonnage of paper products already produced in Monroe, the wonder city of the paper industry.

Brown Paper Mill Co. To Add Machine

The Brown Paper Mill Company, Inc., Monroe, La., is making plans for doubling the capacity of its mill by the installation of another 176 inch wire fourdrinier machine with all pulp and auxiliary equipment.

As yet the paper machine and digesters are all the new equipment actually purchased.

Geo. F. Hardy, 309 Broadway, New York, is the engineer.

Port Alfred Paper Co. Completes First Unit

Two 234 Inch Bagley & Sewall High Speed News Print Fourdriniers and Auxiliary Equipment Now in Successful Operation—Complete Program Provides for Two Additional 234 Inch Fourdriniers, Making Largest News Print Mill in Canada

On the Saguenay River, some seventy miles from its confluence with the River St. Lawrence, is located historic and picturesque Ha Ha Bay; and on this inlet at a point some twelve miles from the head of deep water navigation, the Town of Porth Alfred is situated. In the year 1917, the Ha Ha Bay Sulphite Company, Ltd., was organized, and its sulphite pulp plant began operation at Port Alfred. Upon re-organization of the original company, and the formation of the Port Alfred Pulp and Paper Corporation in the year 1925, it was decided to increase the sulphite pulp capacity, and to develop the properties for the manufacture of news print paper. Plans rapidly materialized, and a four machine news print mill of the most modern and efficient design is now being carried to completion. The first two machines have recently been put into operation, and it is planned to have all four machines under production by the end of this year, at which time, output will be some 400 tons of paper, with a surplus of 150 tons of high grade sulphite pulp.

TRAIN SHED END OF PAPER MILL

MACHINE SHOP

Upon re-organization of the Bay Sulphite Company, Ltd., and

NOS. 1 AND 2 MACHINE ROOM

the formation of the Port Alfred Pulp and Paper Corporation, Geo. M. McKee was appointed president, Mr. McKee being an ex-president of the Canadian Pulp and Paper Association, founder of the Donnacona Paper Company, Donnacona, Que., and also founder of the Algonquin Paper Corporation, Ogdensburg, N. Y. Extensive timberlands were acquired on the Peribonka River, to provide the additional supply of raw material required for the increased pulp and paper production.

Original Program Extended

The initial program called for the installation of two 234 inch high speed news machines, but shortly after commencement of work plans were extended to include four machines, all 234 inches, the first two of which are now in full operation. Engineering and design for the complete plant to include these four units, together with accessory equipment was entrusted to H. S. Taylor, consulting engineer, with general contract in the hands of The Foundation Company of Canada, Ltd. Actual construction work was commenced on August 9, 1925, and buildings for the first two machines were enclosed by January 1, of this year.

The paper mill building and magazine grinder room are of concrete with structural steel floor and roof systems, with gypsum roof decks. The steam plant and substation are of brick, with structural steel and concrete interior. Piling was necessary throughout due to the nature of the soil, and concrete piles were specified and driven under all walls and piers.

Complete Program of Construction

The complete program of construction includes the following structures; new fresh water supply and high-head pump house, mixing and screen room, four-machine news print conversion mill, finishing room, shipping shed, magazine grinder room, steel boiler house, re-arrangement of wood handling system, machine shop, an additional digester, new acid towers, and other accessory installations.

Port Alfred is most ideally situated from a point of view of transportation facilities. Excellent rail accommodation is obtainable over the Roberval & Saguenay Railroad, which connects with the Canadian National at Ha Ha Bay Junction. On account of the mill being located on tide water, deep-sea vessels can be amply accommodated at the wharf. Shipments of the

MAGAZINE GRINDER ROOM

Company's product, therefore, can be made by either rail or water; also, raw materials can be brought in by either method. The Bay also forms an ideal natural booming ground, where the logs can be stored before going into the process of manufacture.

Hydro-Electric Power

Hydro-electric power to operate the mill is supplied by the Quebec Development Company's Ile Malignes Station at Grande Descharge. The power is transmitted some thirty-five miles at a pressure of one hundred fifty-two thousand (152,000) volts. An outdoor substation, located on the mill property and housing the necessary transformer equipment, steps down the voltage to that desired in the mill.

The Canadian Westinghouse Company supplied the major part of the transformers, motors and switching equipment, and the

MIXING ROOM END OF MILL

installation of same was carried out by the Canadian Comstock Company, Ltd. Control apparatus for the magazine grinder installation was supplied by the Canadian General Electric Company, Ltd.

Pulpwood Equipment

At the present time, most of the wood being used in the mill comes from water sheds of rivers emptying into Ha Ha Bay The logs are boomed in the Bay from where they are taken on two jack ladders over the slasher tables. A conveyor system carries the four-foot blocks to the barking drums where all bark and dirt is removed. From there, the wood is conveyed to the storage pile, as much as necessary for operation of the mill going to the wood room. From this point, it is distributed to either the sulphite or the groundwood mill. In the wood room, the blocks are washed and sorted. The wood going to the sulphite mill passes through the chippers, and is conveyed to the chip bins.

The Sulphite Mill

The sulphite mill, with new extensions, now contains five digesters 18 feet in diameter by 54 feet in height, capable of supplying 225 tons of high-grade easy-bleaching sulphite fiber per day. The raw stock coming from the digesters is blown into rectangular blow pits, where it gets its initial washing. The stock thus washed is pumped to a brown stock chest, and from there through the screening system for final conditioning. The news mill draws its supply of sulphite stock from the sulphite decker chest, and the remainder of the sulphite pulp is taken over drying machines, where it is cut in sheets and baled for shipment.

The Groundwood Mill

The groundwood mill, when completed, will contain twenty-two magazine grinders, twelve of the Warren type and ten of the improved Continuous Wood Grinder Process Company's manufacture. The grinders are driven in pairs, one on each end of a motor shaft. Synchronous motors, rated at 2600 h.p., and supplied by the Canadian Westinghouse Company, are the prime movers. The Grinder stones are 62 inches in diameter by 54 inches face, which, at the synchronous speed of the motors, give the desired peripheral speed on the stone. After grinding, the pulp flows to the bull screen pit, where large slivers are removed.

From there, the pulp is slushed in a pipe line to the screen room at the news mill, where final screening and conditioning is done.

A new Jenssen acid system, with a capacity of acid for 280 tons of pulp, has been installed to take care of the additional acid requirement for the sulphite mill.

The Paper Mill

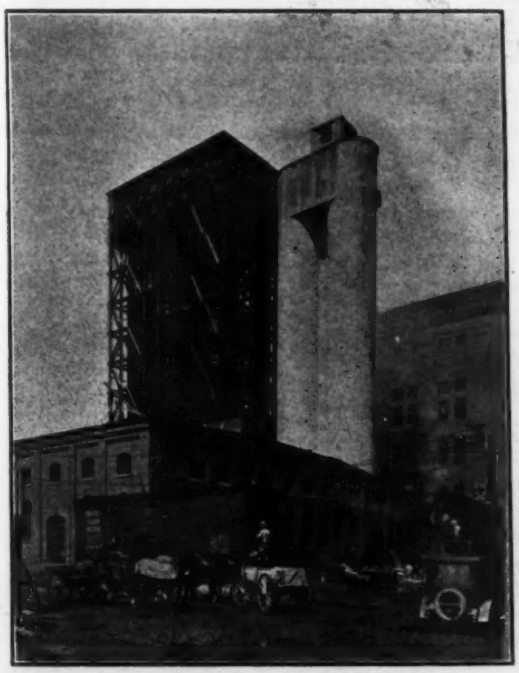
When completed, the conversion mill will contain four 234 inch Bagley and Sewall high-speed paper machines driven by a semi-electric drive. An 800 h.p. variable-speed motor is direct connected to a variable line shaft in the basement, and power is transmitted into the different sections of the machine by means of belts and cone pulleys.

The machine room is for four 234 inch Bagley & Sewall high-speed news machines, each machine being equipped with Briner Economizers and an asbestos gypsum insulated paper machine hood of H. S. Taylor standard design. Results shown by the ventilation system for No. 1 and 2 machines, which is now in full operation, are fully up to expectations, for a cool, dry room is in evidence at all times, with considerably lower temperatures in the room itself, than usually experienced.

Power Equipment

Power to operate the machines, is transmitted by cone pulleys and belts from the variable line shaft, and is distributed into each section of the machine through Cutler-Hammer push button operated magnetic clutches. Control of speed on the main driving motor is accomplished by voltage regulators, this control apparatus being supplied by the Canadian Westinghouse Company as well as the driving motors.

Each paper machine has a 75-foot wire, Millspaugh suction couch roll, two straight presses, one reversing press and 44—5 foot dryers. Steam supplied to the dryer section is controlled by the



NEW JENSSEN ACID SYSTEM

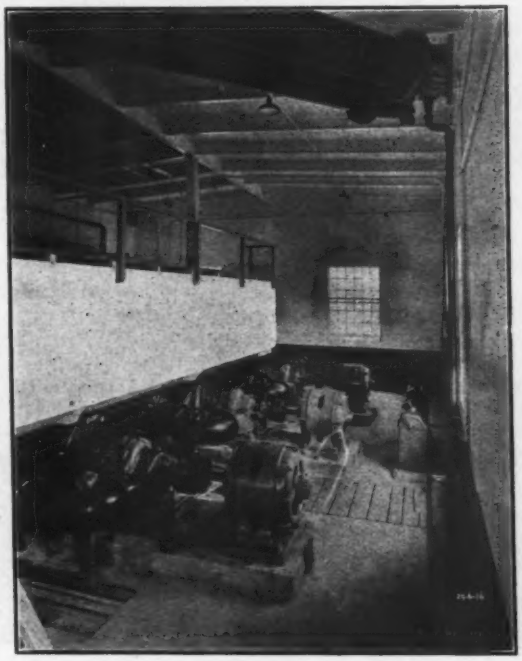
Honeco automatic temperature control system. Condensate is trapped and returned to an open type of feed water heater located in the boiler house. A bowser pressure lubricating system is also installed on the machine.

Extensive Program of Development

This extensive program of development which was launched on August 8th, of last year should be practically complete before the end of this year. At that time, the Port Alfred Pulp and Paper Corporation will have one of the largest newsprint manufacturing establishments in the country.

Officers of the Company

The Head Offices of the Port Alfred Pulp and Paper Corporation is located in the Canada Cement Building, Montreal. The officers include: Geo. M. McKee, president; A. Cross, vice-president; A. Wagner, secretary; C. E. Thompson, assistant to president.



HIGH HEAD PUMP ROOM

C. E. Bergeron is mill manager, and the operating staff is as follows: F. L. Hogan, assistant mill manager; J. Krokenberg, paper mill superintendent; R. Schadt, groundwood mill superintendent; M. Matson, sulphite mill superintendent; M. Doye, chief engineer.

The St. Maurice Valley Sales Ltd., whose head office is in the Canada Cement Building, Montreal, are the selling agents for the company's product.

Finland's Paper Industry Improves

WASHINGTON, D. C., October 12, 1926.—Finland's paper and pulp industries fared in general better during 1925 than during the year preceding as evidenced by increased exports, satisfactory domestic demand, augmented productions, higher dividends in several instances and contemplated improvements and enlargements of the manufacturing plants, says American Consul McGurk at Helsingfors. The contemplated erection of new plants and installation of additional machinery may, however, be partly attributed to the fact that the paper and pulp industries have recently been making greater profit than the timber industries and for this reason more attention is given to the former. Increase in production during the past year was brought about through improvements rather than installation of machinery, while the increase in exportation is due largely to the purchases of Russia. Shipments to that country more than doubled as compared with 1924. Throughout the year the paper mills were able to work without labor or other disturbances. The output of the mechanical pulp mills had to be reduced, however, towards the end of the year on account of lack of water.

Gatineau Construction Work Progressing Rapidly

International Paper Co. Will Possess Water Power of Unlimited Capacity Upon Completion of Present Development Program—News Print Mill Now Building at Templeton Will Contain Four Huge Paper Machines, the Largest Single Producers in the World

Rapid progress is being made on the construction work on the Gatineau River, where the International Paper Company is engaged in one of the largest developments in the paper industry of North America. The Gatineau news print mill of over 600 tons daily capacity is being built, and water powers on the river are being developed to an initial capacity of about 375,000 h.p.

Upon completion of this development the International Paper Company, with its subsidiaries, will have in the United States and Canada a total installed capacity of almost 600,000 h.p., of which 500,000 will be electric and 100,000 hydraulic, capable of being increased, through further development and through utilization of of the now undeveloped sites, to approximately 1,400,000 h.p.

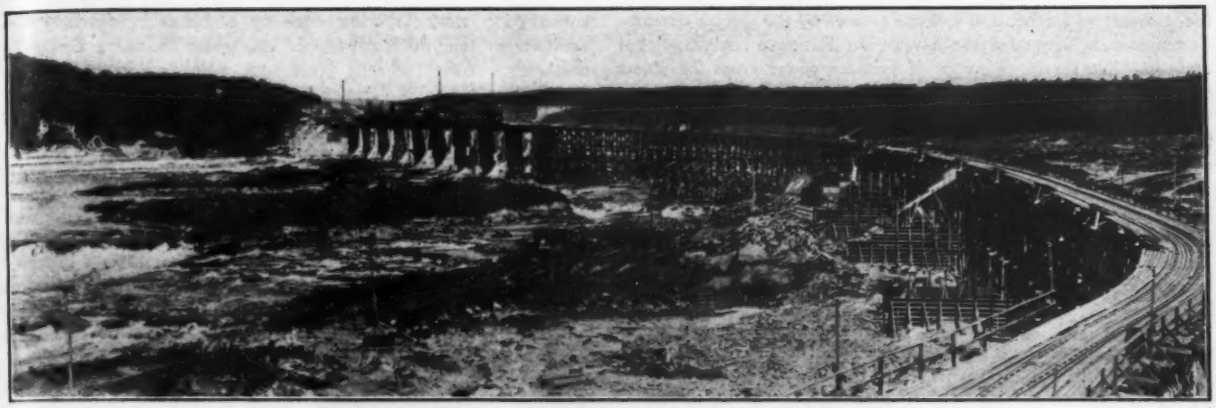
The initial installation at the Gatineau mill will include four paper machines, each of which will produce a sheet of news print 256 inches wide, and will be designed to operate at speeds up to 1,200 feet a minute. These machines will be the largest single unit producers of news print paper in the world.

GATINEAU MILL UNDER CONSTRUCTION

Gatineau An Important Power River

The Gatineau Power Company, a Quebec corporation and a wholly owned subsidiary of the International Paper Company, will own in fee or hold through long term government leaseholds water power sites in the Province of Quebec, Canada, with an ag-

PANORAMIC VIEW AT CHELSEA, LOOKING DOWN-STREAM



FARMERS RAPIDS, LOOKING UP-STREAM, SHOWING THE MAIN DAM

gregate potential capacity in excess of 700,000 horsepower. The company is now undertaking a development program calling for the completion by the fall of 1928 of four hydro-electric plants with an initial aggregate installed generating capacity of 397,500 horsepower, of which 373,500 horsepower is on the Gatineau River. This river, one of the most important power rivers in Quebec, enters the Ottawa River from the north in the vicinity of the City of Ottawa. Two of the developments with over half the initial capacity lie within seven miles of that city. Contracts for the sale of over 90 per cent of the primary power to be generated by the initial installations at these four plants have already been executed with the Hydro-Electric Power Commission of Ontario, the Canadian International Paper Company and the Canadian Cement Company, limited.

Four Hydro-Electric Generating Plants

The property of the company will comprise four hydro-electric generating plants with an aggregate initial installed capacity of 397,500 horsepower, owned in fee or held under long term government leaseholds, and approximately one hundred miles of high tension transmission circuits, certain of which may be owned by a subsidiary. The three power plants on the Gatineau River have been designed to permit the comparatively inexpensive addition of an aggregate of 100,000 horsepower additional when the water storage facilities are increased, making a total capacity of almost 500,000 horsepower.

The Kipawa plant has been in operation at a lesser capacity for several years, and its extension to an installed capacity of 24,000 horsepower is now practically completed. The Kipawa mill is now producing more than one-half of the world's supply of the pulp used for the manufacture of "rayon" or artificial silk.

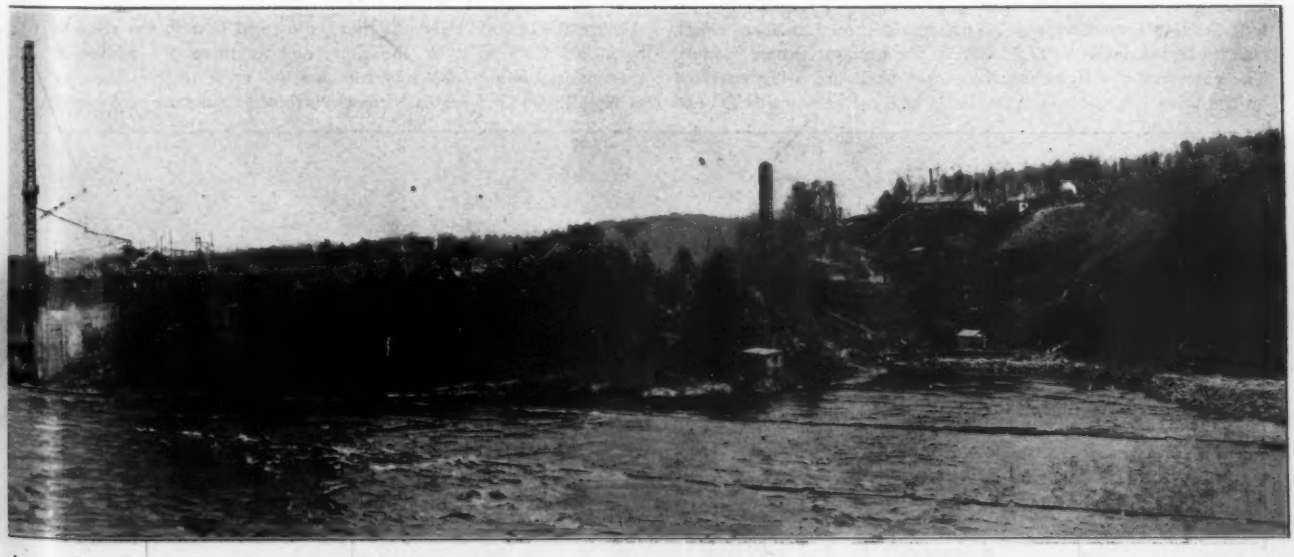
The Farmers plant, now under construction, is located about five miles north of Ottawa on the Gatineau River. It will have an initial capacity of 92,500 horsepower operating under a head of 66 feet.

The Chelsea plant, also under construction, is located about one and one-quarter miles above the Farmers plant and will have an initial capacity of 131,000 horsepower. The concrete dam will impound water extending about thirteen miles up-stream and the plant will operate under a head of 96 feet.

The Paugan plant, upon which it is expected construction work will be started in the fall of 1926, will be located about twenty-five miles above the Chelsea plant. This station will have initial capacity of 150,000 horsepower and will operate under a head of at least 112 feet.

Storage Dam at Bitobi Rapids

A storage dam is being constructed at Bitobi Rapids, 90 miles above the Paugan plant, which will create a storage reservoir with a superficial area of 107 square miles and a capacity of 82,000,000,000 cubic feet. This reservoir, which will become the property of



AT THE LEFT IS THE EAST END OF THE MAIN DAM

the Province of Quebec and will be operated by the Quebec Streams Commission, will equalize the flow of the Gatineau River and thus make possible the large output of primary power from the plants of the Company down stream.

A thirty-year contract has been executed with the Hydro-Electric Power Commission of Ontario which provides for the sale of power to the Commission. Under the terms of this contract the Commission will purchase 80,000 hp. of electrical energy during the twelve months beginning October 1, 1928, the amount increasing annually thereafter to a maximum of 260,000 hp. during the twelve months beginning October 1, 1931, which rate is continued throughout the life of the contract.

In addition, the Canadian International Paper Company has entered into a thirty-year contract for the purchase of a minimum of 74,000 horsepower per annum to be used at its new Gatineau news print mill and its Kipawa pulp mill, and the Canada Cement Company, Ltd., has contracted to purchase 3,000 hp. per annum for an initial period of fifteen years from October 1, 1930, subject to renewal.

Of the primary power available for sale from the initial installation at the company's four plants, over 90 per cent has thus already been disposed of under these long term contracts, leaving unsold only a small proportion which the adjacent power markets are expected to absorb readily.

PAUGAN FALLS

Designed by Canadian Engineers

In an address before the Engineering Institute of Canada, at Ottawa, recently, A. H. White, chief engineer of the International Paper Company said that soon after the Riordon properties were taken over by the Canadian International Paper Company, President A. R. Graustein set in motion the establishment of power plants and a paper mill to make use of the lumber and powers which were a part of the Riordon properties. The Canadian International Paper Company is making use of Canadian talent, manufacturing facilities and labor to the greatest extent possible. The engineering designs for the power plant are being executed by Canadian engineers in Canada. The general engineering and construction work is being done by a Canadian company. In addition to this the company is employing Canadian consulting engineers. Water wheels, generators, paper machines, etc., are bought in Canada.

The Gatineau River has a drainage area above Chelsea, Quebec, of 9,600 square miles. The high level of the lake to be formed by the construction of the Bitobee Dam is 750 feet above tide water. The water level below Farmers Rapids, the lowest fall in the river, is at elevation 157, making a total of 593 feet in a distance of 120 miles. All this fall cannot be used. There are several points at which the fall is concentrated enough and the character of the country is such as to make developments feasible both fron an engineering standpoint and commercially.

The four principal points for developments are Maniwaki, Paugan Falls, Chelsea and Farmers Rapids; the two latter being now in the process of development.

At Bitobi, a short distance below the mouth of the Gens de Terre, a storage dam is to be built to impound 82,000,000,000 cubic feet of water, which, with the natural runoff below the storage dam will give a regulated flow at Chelsea of from 8,000 CFS to 10,000 CFS depending upon the precipitation in any given period. The fall at Paugan Falls is 115 feet, Chelsea 95 feet and Farmers Rapids 65 feet, a total of 275 feet.

At 8,000 CFS and unity load factor, these three heads will develop 220,000 hp. on waterwheel shafts. Higher flows will, of course, yield proportionately greater powers. Of course unity load factor never obtains and the developments will utilize more than the absolute minimum flow of 8,000 CFS. The average commercial load factor may be placed at 60 per cent and this load factor will require a total installation at the points named above of 360,000 hp. on waterwheel shafts.

Since the records show the average natural flow in the river to be 10,000 CFS most of the time, and as there are additional storage possibilities, developments will be made on the basis of at least 10,000 CFS regulated flow which at 60 per cent load factor

KIPAWA SULPHITE PLANT

will require an ultimate installation of 450,000 hp. of waterwheels. If we allow 10 per cent for losses from waterwheel shafts to the point of delivery of electric current, we will have 405,000 hp. delivered for 60 per cent of the time. These statements apply to Chelsea, Farmers and Paugan.

In addition to the above there are other heads capable of development which should bring the total of 60 per cent load factor delivered power up to the neighborhood of 600,000 hp.

At Bitobi, a storage dam is to be built under the direction of the Quebec Streams Commission, O. Lefebvre, chief engineer. The crest of this dam is to be at elevation 750, possibly 755. Three cutoff dams are necessary: at Castor Lake, Lacroix Creek and Philemon Creek. Work has already commenced on this dam. Cement and other necessary materials to the extent of some 10,000 tons having been taken in over the snow during the last winter. The distance from the railway to Maniwaki is about 28 miles. It is intended and expected to have this work finished by January 1, 1827, at a cost of approximately $3,000,000.

Chelsea Dam and Power House

At Chelsea, about eight miles above Ottawa, the construction of a dam and power house is well under way. The crest of the spillway at this point will be at elevation 315. Flashboards will hold the water at periods of low flow elevation 318. This dam will set the water back about to the village of Wakefield and will necessitate moving back on to higher ground some six miles of Canadian Pacific Railway and also of the highway. The power house will be between the island the west shore of the river. The dam between the island on the east short of the river is to contain flood gates and across the island will be the spillway before mentioned, carrying flashboards which will go off in flood time.

Designed for Francis Turbines

The power house has been designed for five Francis turbines of 34,000 hp. each of 95 feet head, the turbines running at a speed of 100 r.p.m. The turbines will be of the Francis vertical type and will each drive a Canadian Westinghouse generator. Turbines will be built by the Dominion Engineering Company of Montreal. Draft tubes are of the Moody type. Water after passing through the wheels and draft tubes will come into a tailrace which will extend 1,200 feet from the power house through the channel between the island and the west short. The generators will produce current at 6,600 volts which will be stepped up to 110,000 volts for distribution.

Farmers Rapids Plant

At Farmers Rapids, about 7,000 feet below Chelsea dam, we are building an hydro-electric plant to contain five Francis type turbines of 24,000 hp. each, directly connected to generators to be built by the Canadian General Electric Company. On account of the short distance between the two plants the Chelsea and Farmers Rapids plants will be run in synchronism, each plant using the same amount of water at the same time.

Dominion Engineering Works to Supply Paper Machines

The International Paper Company with its subsidiaries is now the largest manufacturer of paper in the world and one of the largest holders of water powers and timber limits in North America. The capacity of its paper mills is more than twice as great as that of any other company on this Continent. Its timberland freeholds and Canadian Crown timber limit leases cover over 12,000,000 acres or an area substantially larger than the combined areas of Massachusetts, Connecticut, Rhode Island and Long Island. Upon completion of the present development program of the Gatineau Power Company, the International Paper Company with its wholly owned subsidiaries will have developed water powers with a total installed capacity of almost 600,000 hp. (500,000 hp. hydro-electric and 100,000 hp. hydraulic), capable of being increased through further development and through the utilization of undeveloped sites to about 1,400,000 hp.

Valuable Contracts Secured

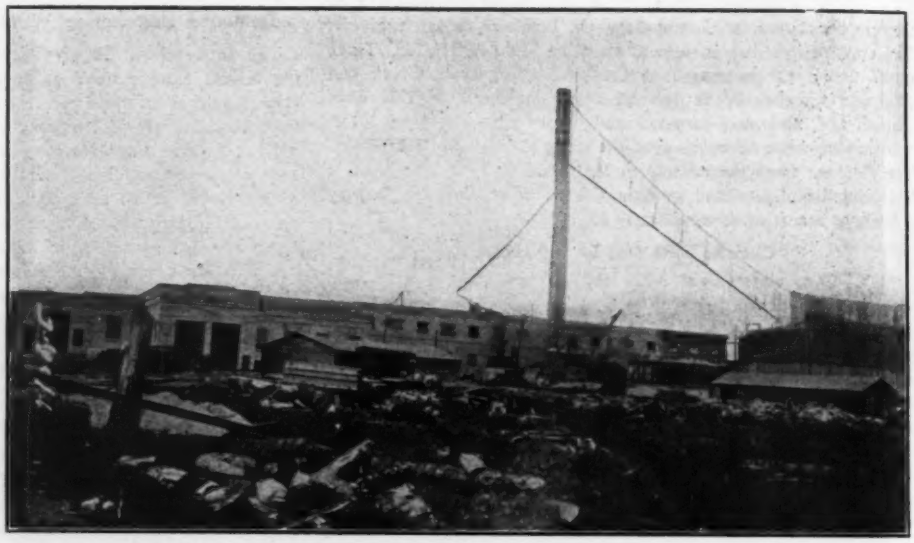
Power from these plants will be used at the paper mill now building at West Templeton, about four miles below Ottawa on the Quebec side of the Ottawa River and by others as the demand may require. The paper mill building at West Templeton will be called the Gatineau Mill. The first unit will contain four paper machines, capable of producing a sheet of news print paper 256 inches wide at the rate of 1,200 f.p.m. These machines will be the largest single producers so far installed in the world. The paper mill will require some 39,000 hp. for grinding wood and for miscellaneous needs about the mill. In addition, electric boilers will be installed to use surplus electrical energy until such time as the demand for such energy no longer warrants its use for making steam. The paper machines, wood pulp grinders, sulphite digesters and practically all other machinery used in the mill will be of Canadian manufacture. Paper machines will be furnished by the Dominion Engineering Works.

PROPOSED SITE OF PAPER MILL OF FRAZIER COMPANIES, LTD., AT CAMPBELTON

Manitoba Paper Co. Erecting Mill at Pine Falls

New Plant Seventy Miles Northeast of Winnipeg Will Begin to Produce News Print Paper Early in December—Machine Room Will Contain Two 226 Inch Fourdriniers—News Print Output Will Be 500,000 lbs. and Sulphite Pulp Output 150,000 lbs. Daily

The G. H. Mead organization, of Dayton, Ohio, which controls a number of pulp and paper plants in the United States and Canada, is reported to be back of a large industrial project now nearly completion at Pine Falls, Manitoba, seventy miles northeast of Winnipeg. At this place a news print mill designed by George F. Hardy, consulting engineer, of 305-309 Broadway, New York, is being erected by the Manitoba Paper Company, Ltd., at an estimated cost of $6,000,000, though the enterprise as a whole will involve a tremendous investment, it is understood. Canadians who are familiar with the details of the project refer to it as the "eleven million paper mill." When completed it is expected to be the greatest industrial development in the province of Manitoba.



GENERAL VIEW FROM SOUTH IN JULY

Considerable interest has been manifested in the project by Miami Valley paper mill men, particularly in Dayton and throughout Ohio, where George H. Mead and his associates are widely and favorably known. Recently Paul Banker, of Middletown, visited the Manitoba section. He reports that one thousand workmen are now being rushed at top-speed to complete the paper mill and the town which shall house its employees and officials. The word has gone forth, he states, that the mill must be ready to produce paper by December 1.

The structure of the mill is completed, some eighty homes for workmen are now under construction, and more will be started before the winter comes, while thousands of tons of materials both for the mill and for the town of Pine Falls are being shipped in to the site each week. A year ago, Pine Falls was a clearing in the virgin pine forests of Manitoba. There was not a house or a structure of any kind in sight. The clearing itself could be reached only by team and buck board over rough and little used trails.

In the last year a railroad branch has been constructed to the mill site by the Canadian National Railways, which is extending every possible co-operation to the promoters of the new paper mill and the builders of the town of Pine Falls. Ever since the railroad branch line has been completed, a large force of workmen have been kept busy at the mill site. They are housed in cantonments similar to those of war days, with comfortable sleeping quarters and mess halls capable of seating 800 workmen at one sitting.

NORTH ELEVATION MACHINE ROOM IN JULY

As the time for completion of the mill draws near, more and more workmen are being sent to the scene, and they are employed in three shifts of eight hours each, the work of construction never stopping night or day. Building a paper mill in the midst of a

virgin forest, and being obliged also to build a complete town from the ground up, is one of the most courageous undertakings one can conceive, particularly when the construction and transportation problems confronting the promoters are so difficult.

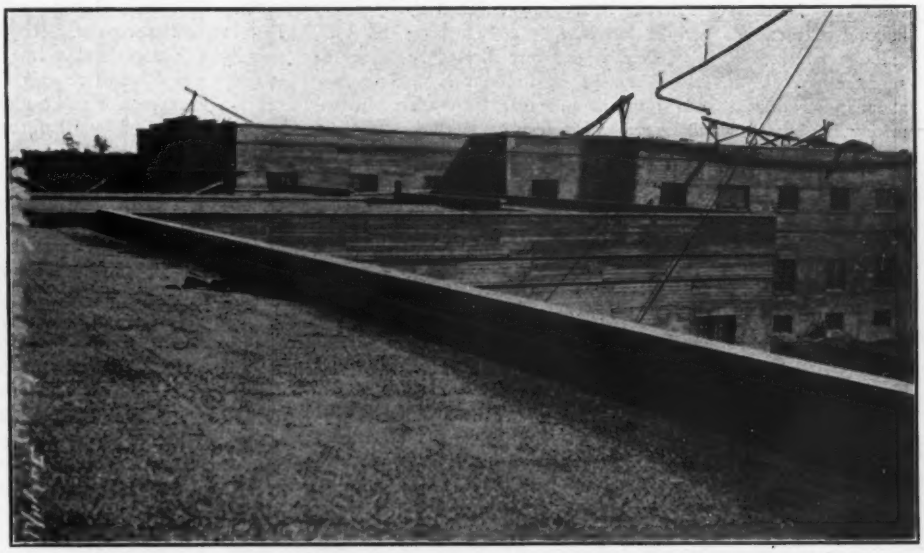
The land had to be cleared for the twenty miles of railroad which have been built out to the mill site. The railroad was built over "muskeg" which is a sort of combination of rotted leaves, moss and roots of trees, which sinks beneath the feet, making most difficult the construction of a railroad. Every yard of gravel or crushed stone used for ballast had to be hauled in from a distance and the engineering difficulties of draining the moist muskeg sufficient to build a railroad right of way on top were enormous. The Canadian Government is aiding by the construction of drainage ditches back through the prairie, and the railroad itself has spent thousands in the attempt to make its right of way fit for use.

Site Selected by J. D. MacArthur

The Pine Falls site for a news print mill was selected a number of years ago by J. D. MacArthur, a Winnipeg contractor and promoter, who had visions of a great news print mill which could utilize the abundant virgin wood-pulp timber along the shores of Lake Winnipeg, Winnipeg River and other rivers emptying into Lake Winnipeg. He interested capital in his project, did something toward obtaining the timber limits grant from the Dominion Government, and cleared the land for the mill.

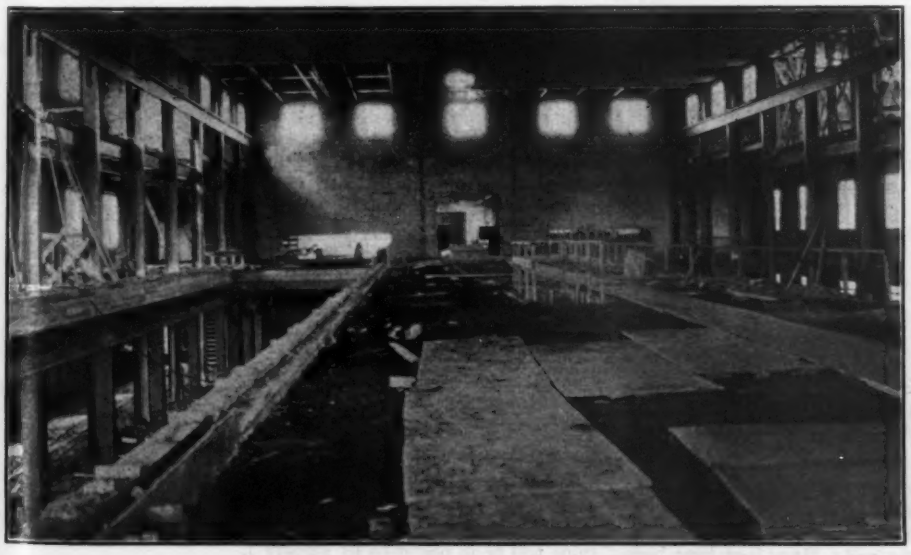
A difficulty arose. Perhaps it was lack of sufficient capital for the gigantic undertaking; he may have failed to obtain the timber grant;—at any rate the matter was abandoned until some year and a half ago when the enterprising Mead organization of Dayton had the possibilities of the Manitoba development placed before them and plans were immediately begun for the organization of the Manitoba Pulp and Paper Company and the erection of the Pine Falls mill.

The first big problem came with the obtaining of timber limits from the Canadian government. Canada has a policy of forest conservation. In recent years it has been difficult to obtain grants of timber for wood-pulp manufacture; and when an untouched acreage is located, it means a fortune for somebody. The timber limits were obtained from the Canadian government, and then began the plans for utilizing them. There was no railroad. There was no mill. There was no town where the workmen in the pulp and paper industry might live with their families.



SOUTH ELEVATION MACHINE ROOM IN JULY

The Canadian National Railways, closely in touch with the project, offered to build a branch line from their Beach line which connects Winnipeg with the two popular summer resorts on Lake Winnipeg, twenty-two miles to the north. This construction consumed some months, and meanwhile engineers were at work with the surveys and plans and specifications for the new mill. When the railroad was ready to deliver freight, there were building materials and machinery ready to be hauled on to the mill site.



INSIDE MACHINE ROOM IN JULY

Construction by Carter, Hall, Addinger Co.

The Carter, Hall, Addinger Company, one of the great construction companies of the continent, who also have the contract for the new $10,000,000 building of the Hudson Bay Company at Winnipeg, was given the contract for the erection of the mill, and immediately a force of workmen was sent to the woods to begin the task of building a modern, fireproof, paper mill in a wilderness, where only a few weeks

before deer, moose and other wild creatures roamed unmolested.

Leonard E. Schlemm, landscape architect and town planner, of Montreal, Que., was consulted with instructions to lay plans for the town of Pine Falls, which according to those who have kept in touch with the development, will be a city of some three thousand persons ere long. He studied the typography and finally evolved plans for what will be, it is said, a "model city."

The little town is built with various "Circles" as streets. The roadways for these circles have already been cut through the trees and the muskeg soil has been badly churned up by heavy hauling of materials for the homes.

Forty houses, of six specific types, were started early in the summer. Work was being started on the second forty homes about September 1, and foremen said that by winter approximately 125 homes would be ready for occupancy. The structures are of simple design, but cozy, warm, and convenient. There will be electric light, city water, sewers, and other conveniences of the city, yet this village that is being constructed is seventy miles from the nearest city.

Model Town Being Laid Out

Sites have been laid out for three churches, all to be erected by the paper company, and for a splendid eight room school. Only two of the rooms are to be completed this fall, but the remainder of the structure will be ready by the opening of school in September, 1927. The homes are all to be owned by the company, who will in turn lease them to employees on nominal terms. "Staff houses" so called, were erected at the outset for the housing of officials of the construction company and the paper mill itself, and for their wives.

The dwellings of the city are to be used for the married employees of the mill, while attractive "staff houses" will house the unmarried men, who will be numerous. Despite its frontier flavor, there already are quite a number of women at Pine Falls, and others will come as soon as there are accommodations.

All houses in the town are to be stuccoed, visitors are informed, and the roads over the muskeg are all to be improved either with macadam or other material. In rainy weather the roads are virtually impassable and corduroy roads made from small trees hastily cut down in the nearby forests, are to be found throughout the reservation.

Machine Room Houses Two Fourdriniers

The mill itself will not be unusually large. The machine room is built to house two paper making machines, foundations for which are both put in. The mill will operate on the straight line principle. The logs will be brought from the storage bay a few hundred feet from the plant by means of a power conveyor, put into the "digestors" where they will be ground to pulp, and from enormous chests the stock will be fed into the two 226 inch paper machines. The roll paper will come off at the far end of the machine room, and the shipping department at the extreme end of the building will load the completed rolls on to waiting freight cars. The output of the news print mill will be 500,000 lbs. daily, while the production of the Sulphite pulp mill will be 150,000 lbs. daily.

Hydro-Electric Power Secured

The mill is to purchase its electric power from the Manitoba Power Company, which has its hydro-electric plant some fourteen miles up the river. Already the great high tension lines have been brought onto the mill clearing. Steam for the digesters and driers will be derived from electric boilers, and all of the machinery of the new mill will be electrically operated, as is done in nearly all the modern mills. Electric power is very cheap in Manitoba whereas coal must be transported from the head of lakes in Alberta.

A storage bay in the Winnipeg river adjacent to the mill provides storage for millions of feet of cordwood. For the last year, cutting has been going on and the bay is now jammed with logs waiting for the opening of the mill. Many logs have been floated down the Winnipeg river direct to the mill, others have been shipped in by rail and piled up advantageously on the ground surrounding the mill.

Once cutting is started on the timber limits controlled by the paper concern, it is said that workmen may begin at one end of the reservation sending the logs down the river to the mills, and by the time the cutting has progressed the entire length of the reservation, the second growth on the portion originally cut, will be ready for recutting.

Mr. MacArthur, the man who first had the dream of the Pine Falls mill, has retired. He owns some 135,000 acres of supposedly worthless land a few miles southwest of the mill. He has purchased steam shovels and drag lines and is draining the land. He expects to make it fit for cultivation, and although he expects to be dead long before this work is completed, he believes that his example will be one which will benefit all of Canada in the reclamation of so-called worthless "muskeg" land.

Train service to Pine Falls at present is meagre. Trains run on Tuesdays and Fridays, a "mixed" train of freight and passenger cars running up over the new line on these days.

Great electric motors are being transported into the reservation. Heavy paper rolls, huge boilers, thousands and thousands of bags of cement, car load after car load of sand and gravel for concrete, and millions of feet of lumber and steel for the construction of the homes is already passing over this twenty mile branch line, which did not exist a year ago.

Pine Falls Railroad Branch Busy

The railroad is already getting a nice tonnage out of its Pine Falls branch, but with the completion of the mill and the town, its freight and passenger business will both increase. The paper will have to be shipped out each day, while supplies for the town and the mill also must be shipped in.

A visit to Pine Falls a year hence, say the men who are now building the place, will reveal a totally different spectacle from that now presented. Instead of a hopeless wilderness the visitor will see a spotless city, with thriving churches, stores, and nicely kept dwellings, while approximately 25 cars of finished news print will be leaving the new mill daily throughout the season.

The officers of the Manitoba Paper Company, Ltd., are: W. N. Hurlbut, president; J. D. McArthur, vice president; Geo. R. Gray, vice president; B. W. Thompson, secretary; Allan W. Macbeth, treasurer, and W. G. Harbottle, assistant treasurer.

Paper Machine Installation in Japan

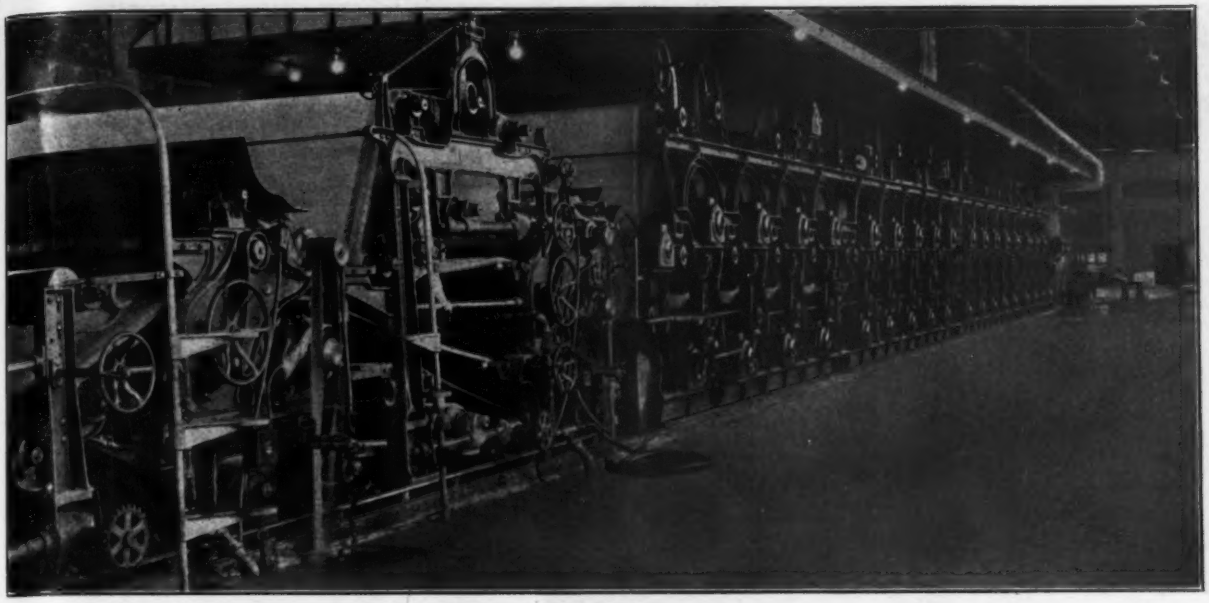
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 5, 1926.—During 1925 the new paper machinery installed in Japanese paper mills showed a total of 818 widths inches, the actual number of machines being 8, says American Consul Ballantine, at Tokyo.

The report says that it was planned to install this year, two additional machines, one of 112 inches and one of 142 inches. During last year the total production of paper, exclusive of strawboard, in Japan, is estimated at 517,650 short tons as against 470,845 short tons in 1924, and 436,400 tons in 1923. At the present time, says the report, production is considerably in excess of consumption and the market is suffering from a depression. The situation is further aggravated by the fact that the rise in exchange has stimulated paper imports. It is now reported that an agreement has finally been reached to curtail the production of the best quality of printing paper 10 per cent, this agreement having gone into effect in August. The companies that have entered into this agreement exercise a dominating position in the domestic market.

Emerson Carey Fibre Co. Adds Machine

The Emerson Carey Fibre Products Company, Hutchinson, Kans., is installing a new paper machine which will be run entirely in straw board for egg case fillers. It is expected that the new machine will be in operation by January 1.



NEW PUSEY & JONES FOURDRINIER

Beaver Wood Fibre Co. Starts News Print Plant

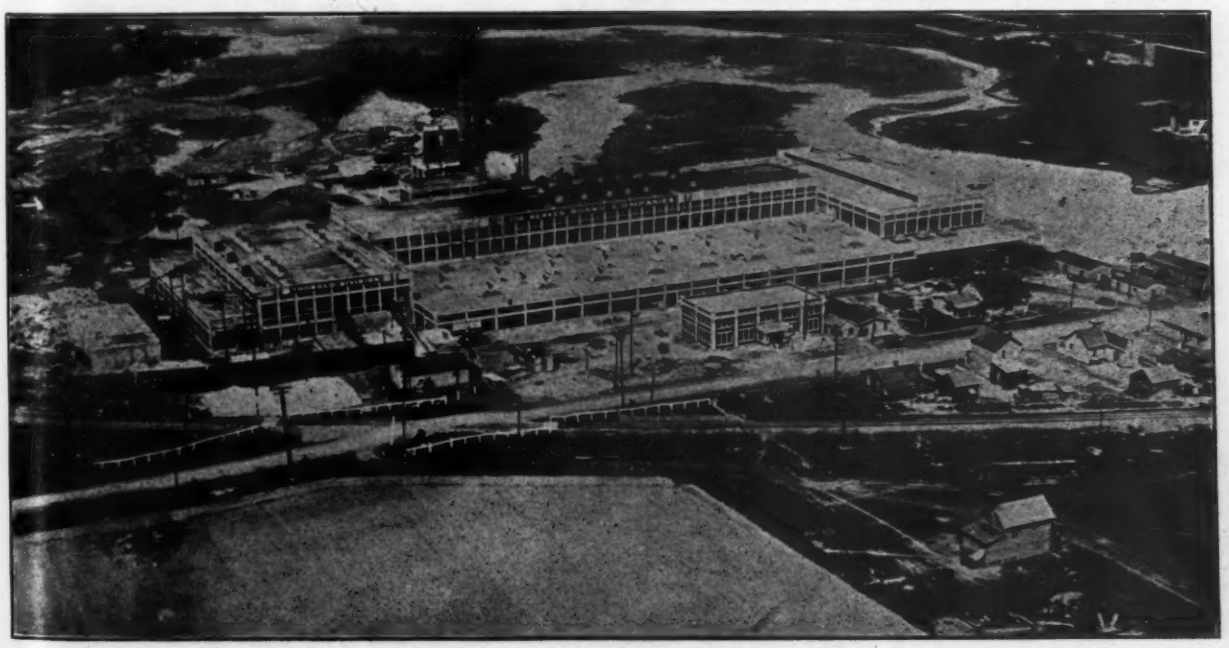
In November, 1925, the Beaver Wood Fibre Company, Ltd., completed the construction of a sixty-five ton paper machine, which has since operated at full capacity, practically without interruption, producing a very high grade of news print stock.

Alterations and additions were made at the company's Thorold, Ont., pulp and board plant to accommodate the paper machine, which occupies a room approximately 360 x 62 feet in size. The buildings are of modern design, constructed of steel, reinforced concrete and brick.

The news print machine was built by the Pusey & Jones Company, Wilmington, Del. Engineers in charge of installation were H. S. Ferguson and Edgar G. Barrett, of New York.

A Trimby proportioning machine is used. The machine is equipped with two Bird screens. The Fourdrinier is designed for speeds ranging between seven hundred and fifty and eight hundred feet per minute. The wire is 166 inches wide and seventy-five feet long. The machine has three presses.

Suction couch rolls were furnished by the Dominion Engineering Company, Montreal. Suction boxes were supplied by the machine builders and are of the oscillating type, which is said



AIRPLANE VIEW OF BEAVER WOOD FIBRE CO. PLANT, THOROLD, ONT.

1200 HP. MOTORS, RUNNING ON NIAGARA FALLS POWER, CONNECTED TO GRINDERS

to minimize wear on the wire. Suction pumps were furnished by the Walmsley Company, Montreal.

There are forty-eight dryers, 72 inches in diameter, one calender stack, one drum reel and a Pusey & Jones winder. The drying system was furnished by the Ross Engineering Company, Montreal and Farnsworth Manufacturing Company, Harrisburg, Pa.

The paper machine is driven by a Terry steam turbine. The plant is equipped with seven 325 hp. Babcock and Wilcox boilers. Grinders and other machinery are driven by electric motors drawing power from the hydro-electric plants at Niagara Falls.

The Beaver Wood Fibre Company is the Canadian subsidiary of the Beaver Products Company, whose executive offices are at Buffalo, N. Y. Some twenty years ago the parent company developed and perfected what was then an entirely new wood fiber product, which was introduced under the trade name Beaver Board. Since the material met a long felt need, not only as a wall and ceiling material, but for hundreds of other uses which were subsequently found for this "manufactured lumber", a huge demand quickly developed and today the name Beaver Board is synonymous the world over for fiber wall board.

Controls Raw Material Supply

In 1917 the company acquired a tract of one hundred and eighty square miles of Virgin white spruce forest lands located in the vicinity of Frederickhouse, Canada. The property was purchased primarily to insure an adequate and uniform supply of wood for the production of its fiber wall board and other wood fiber products. However, as the equipment of the company's pulp and board mills was equally suited to producing pulp for paper manufacture, and with such resources of raw material at its command, it was logical that the company should eventually broaden its field to include the manufacture of wood fiber paper stock.

The Beaver Products Company, in addition to being the world's largest fiber wall board manufacturer, with branches and sales agencies in all important countries, manufactures the well known brands of American Cement Plaster and gypsum partition block, Bestwall, "the Superior Plaster Wall Board," and other gypsum products, having gypsum deposits, mines and plaster mills throughout the United States.

The company is also one of the largest makers of asphalt shingles and other roofing materials, its Vulcanite brand being well known in the United States and Canada. The company operates its own roofing felt mills at Anderson, Indiana.

John Ball is resident manager of the Beaver Wood Fibre Company at Thorold, Canada.

St. Helens Paper Co. Issues $1,000,000 Bonds

PORTLAND, Ore., October 16, 1926.—Blyth, Witter & Co., announce the launching of a new issue of $1,000,000 in first mortgage sinking fund 6½ per cent gold bonds on the St. Helens Pulp and Paper company, dated October 1, 1926, and due October 1, 1941. The issues are in coupon bonds in denominations of $1,000 and $500, registered principal, interest payable semi-annually.

The St. Helens Pulp and Paper Company, an Oregon corporation, was organized in November, 1924, for the purpose of erecting a sulphate pulp and paper mill at St. Helens, which mill is practically completed and will be in operation about January 1 of next year. The company will specialize in the manufacture of high grade kraft pulp and paper and the entire output has been contracted for by the the Graham Paper Company, of St. Louis, Mo., who will distribute it as sole selling agents.

The properties of the company include 32 acres with 600 feet of deep water frontage on the Columbia river where a dock has been constructed for ocean going vessels. St. Helens was selected as the site because of the water facilities and its proximity to the sawmills of the lower Columbia river territory. The mill proper, which except for the woodworking plants, is of fireproof steel and concrete construction consisting of four units. The mill will have a total daily capacity of about 50 tons of finished kraft paper.

The bonds will be secured by a closed first mortgage on all the fixed assets of the company, consisting of lands, plants, machinery and other equipments, valued at $1,936,921.30. It is estimated that the annual earnings available for interest after taxes and depreciation will be $379,735 or over 5.8 times maximum interest charges on these bonds or 2.7 times maximum interest and sinking fund requirements. The mortgage will provide for annual sinking fund payments, beginning March, 1929, sufficient to retire the entire issue by Maturity, the annual bond retirement being not less than $75,000 par value.

The proceeds of the financing will be used by the St. Helens Pulp and Paper Company to pay in part for the completion of the plant and for additional working capital.

Water Power at Grand Falls for New I. P. Mills

Scheme of Development by St. John River Power Co. Calls for Initial Installation of 60,000 H.P.—Three Units of 20,000 H.P. Each to be Installed in Power House—News Print Plants to be Erected by New Brunswick International Paper Co.

Of great importance to the paper industry is the Grand Falls development of the St. John River Power Company. The St. John River is the largest river, not only in New Brunswick, but in the Maritime Provinces. It drains the largest basin between the St. Lawrence and the Susquehanna Rivers. It is an international river, as it has its headwaters in the State of Maine, forms part of the border between the United States and Canada, and flows through New Brunswick into the Bay of Fundy.

The principal water power on the St. John River is that at Grand Falls, New Brunswick. The development of this water power has been attended with what has seemed at times to be almost insurmountable obstacles. In 1894, the Grand Falls Water Power and Boom Company acquired the interests of the Dominion of Canada, which owned the northeast bank of the river at Grand Falls, having acquired it for military purposes before confederation. In 1905 a rival company, the Grand Falls Power Company, obtained the interests of the Province on the southwest side of the river. This deadlock prevented any development. In 1912 the Grand Falls Company was formed and acquired the properties of the rival companies.

OPENING BLAST AT GRAND FALLS

Shortly thereafter International Paper Company obtained a two-thirds interest in this company, and development seemed certain. The War came, however, and put development out of the question. Following the War, there was a period of inflation which in turn was followed by a severe business depression, again postponing development. To add to the difficulties, there were five political entities involved in development—the Dominion of Canada, the United States of America, the Provinces of New Brunswick and Quebec, and the State of Maine.

Obstacles to Development Overcome

These difficulties have at last been overcome as the result of many years of work. All the necessary properties are now vested in one company, and the International Joint Commission, with the approval of the various governments involved, has issued its order permitting the work to go on. After many efforts by his predecessors it has fallen to the Hon. John B. M. Baxter, present Premier of the Province of New Brunswick, and his associates, including the Hon. E. A. Reilly, chairman of the New Brunswick Electric Power Commission, to conclude on the part of the Province the final arrangements which make possible the development.

The St. John River Power Company was formed by Act of the Legislature of New Brunswick in April, 1926, and is the company which is now developing Grand Falls. All the common stock of this company is owned by International Paper Company. The proposed scheme of development calls for an initial installation of 60,000 horsepower and involves erection of a dam just above the Falls, a tunnel through the rock under the town of Grand Falls, from the upper basin to the lower basin, and a power house on the

GRAND FALLS

lower basin. In the power house, it is proposed to install initially three units of 20,000 horsepower each. The St. John River is what is commonly called a flashy river, that is, a large amount of water runs off in spring and fall flood periods, and during the remainder of the year the flow is low.

To increase the natural low water flow the company, with the co-operation of Fraser Companies, Ltd., proposes to construct a storage reservoir on the Madawaska River, one of the large tributaries which rises in Quebec and flows into the St. John River at Edmundston. The Madawaska storage will impound water during the flood periods for use during the low water periods. This will in part reduce floods which have occurred in the St. John River nearly every spring, and be of benefit to the Province in lessening the damages resulting from the floods. Any additional storage developed in the future will, of course, further ameliorate flood conditions.

Dominion Construction Co. Awarded Contract

International Paper Company has announced that in all its work in New Brunswick, it will give preference to residents of New Brunswick in employing labor, letting contracts, and making purchases. The work will be under the supervision of A. H. White, the chief engineer of International Paper Company, and H. G. Acres, of Niagara Falls, Ontario, who is acting as a consultant. The contract for the work has been awarded to the Dominion Construction Company, which is well known in New Brunswick through its principals, H. F. McLean and Andrew Wheaton, New Brunswick men.

Part of the power to be generated is reserved for the use of the Province for general industries. The balance of the power will be used for news print mills to be erected by International Paper Company through its subsidiary, New Brunswick International Paper Company, and by Fraser Companies, Ltd. One of these mills will probably be erected on the Restigouche River or the Bay of Chaleur, to use the wood on the Restigouche River.

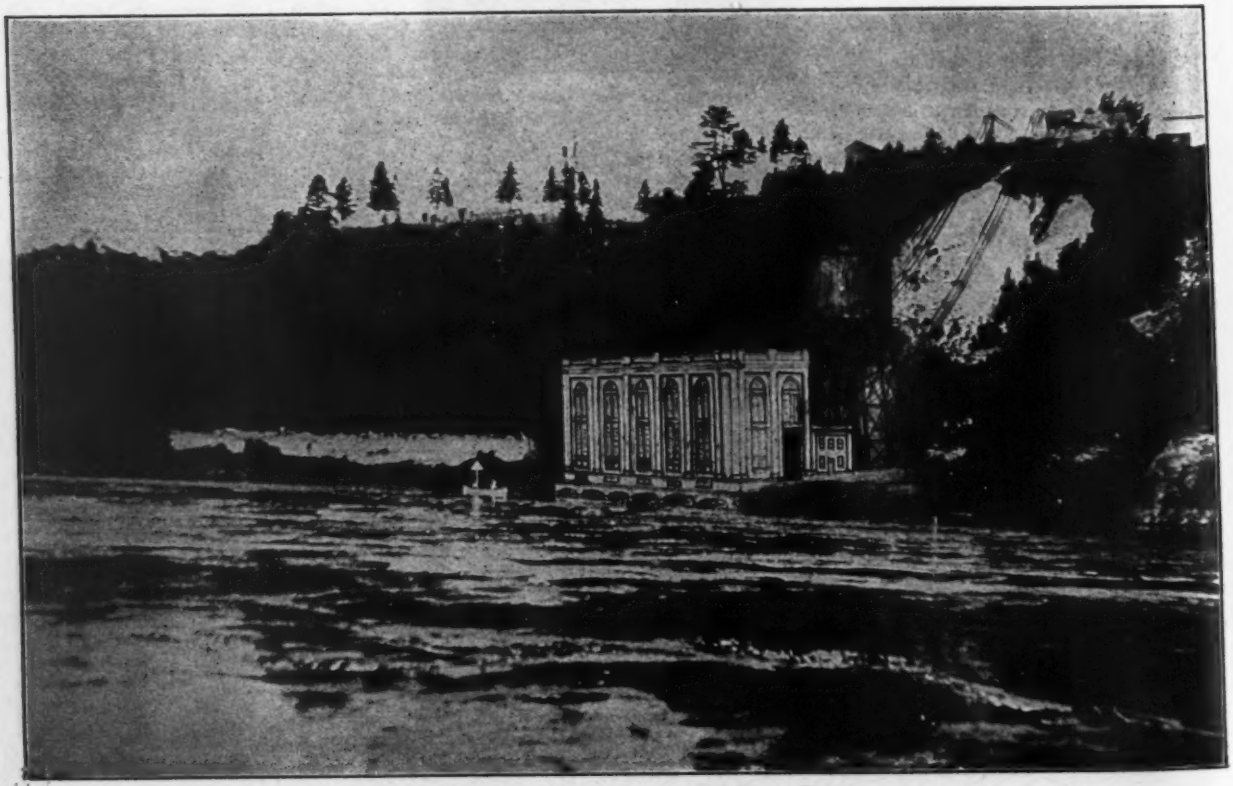
In New Brunswick, International Paper Company has heretofore carried on its operations through two subsidiaries, Miramichi Lumber Company and Dalhousie Lumber Company, these companies being under the supervision of J. W. Brankley. The Company also owns and operates a coal mine at Minto, New Brunswick, which is under the supervision of A. D. Taylor.

President A. R. Graustein's View

The formal commencement of the hydro electric development at Grand Falls took place on August 10 amid ceremonies appropriate to the occasion. The Premier of New Brunswick, the Hon. J. B. M. Baxter, pressed a button, which fired the first shot in the blasting operations and the beginning of construction work. A. R. Graustein, president of the International Paper Company, addressed the guests at the ceremony, as follows:

"The pleasure which I have in addressing you today is largely inspired by a keen sense of the privilege which the course of events has brought us in laying before the company I represent this opportunity to play an important part in the development of a great and historic province. For many years the lumber industry has been one of the mainstays of New Brunswick. Recently, however, the opening of the Panama Canal has brought here lumber from the Pacific Coast which has created a condition of severe competition, forcing a number of mills in Eastern Canada and the United States to shut down. The decline of the lumber industry has given emphasis to the importance of developing other industries, among the most promising of which is the utilization, when feasible, of the timber resources of the Province in the manufacture of wood into news print paper.

"But for news print paper large supplies of power are necessary. For these we turn to the rivers of the Province. The St. John is the greatest river not only in New Brunswick, but on all the North Atlantic Coast from the St. Lawrence to the Susquehanna. It has, however, presented obstacles to development which have at times seemed almost unsurmountable. Added to physical characteristics making the power development not inexpensive and making the necessary storage facilities difficult to



PROPOSED POWER HOUSE AND TANK AT GRAND FALLS

Photo by Pacific Airways, Ltd.

AIRPLANE VIEW OF PLANT OF POWELL RIVER CO., POWELL RIVER, B. C.

provide to the full extent that they are desirable, is the further fact that five sovereignties as well as the private interests affected had to co-operate to bring about this use of its largest power.

"The development may, therefore, be called a triumph of co-operation. Benefits to Maine and Quebec should follow their assistance—both indirect, through stimulation of business with their neighbor, and direct, to extent that they receive power. Though the achievement of this co-operation required from us concessions to the point of view of the Provincial authorities which we were reluctant to make, it was helpful to find here as we have found elsewhere in Canada an appreciation of the advantages to a community of the development of its natural resources and a very real willingness to co-operate with those who were prepared to invest their capital in the industries of the country.

"International Paper Company, well named for this purpose, is the instrumentality by which the power is to be developed. International Paper Company has long had extensive and valuable properties in Canada, which we have recently largely increased by purchase and construction, till now we are not only the largest producer of sulphite pulp in Canada but will also, on the completion of the Gatineau Mill, be the largest producer of news print in Canada, as in the world.

"We have consistently endeavored to have our Canadian enterprises promote the prosperity of Canada in every way possible, through the employment of Canadian labor and purchase of Canadian materials and of equipment manufactured in Canada, wherever we could do so without a loss. In fact, when we recently asked for quotations for machinery for a Canadian plant from a United States manufacturer, he told us it was not worth his while to submit a bid as he knew we intended to buy the machinery in Canada anyway.

"This policy is to be carried out where possible in New Brunswick through the employment of New Brunswick labor and the purchase of New Brunswick materials. And while the International Paper Company is a United States corporation, the enterprise is fundamentally New Brunswick and Canadian. It stays here. It gives labor and pays wages, buys materials and creates wealth here. And the paper company itself is far from being a foreigner in Canada.

"True, in the past by far the greater part of the earnings of International Paper Company were in the United States and the company was almost wholly owned there. Now, however, that the company has become active in Ontario, Quebec and New Brunswick, the number of Canadian shareholders has greatly increased. These Canadian properties have appealed to the Canadian investors as sound and these investors have bought very substantially of our bonds and our shares, and will have a part in the management of our Canadian enterprises.

"Speaking for myself and for my associates in the United States, I wish to express here the hope that more Canadian investors will by purchasing our shares indicate that they share our confidence in the future of our industries in Canada. And it is a pleasure to take the opportunity to express to you all personally the faith which our work now started has already shown, faith not only in this power development, but also in the news print and other industries to be based on it, and in the future of the Province of New Brunswick."

Brompton Pulp & Paper Co. Adds Machine

SHERBROKE, Que., October 25, 1926.—Rapid progress is being made by the Brompton Pulp and Paper Company on its new paper mill at Bromptonville, Que. This is the company's latest mill and will have one 234 inch Wambsley Fourdrinier machine designed to make news print paper at twelve hundred feet per minute and to turn off one hundred tons of paper daily.

The stock for this machine will be prepared in Dilts' New Type beating engines fitted with Stuart patented pneumatic bedplates.

This, like many modern news print mills, will also have a Dilts' continuous beater erected in the basement at the dry end of the machine to take care of the broken and waste.

The many years experience of J. A. Bothwell, general manager, under whose supervision this mill has developed is manifest throughout in design and equipment making this one of the most modern mills ever constructed.

SEVEN HUNDRED FOOT DAM ON GREAT MIAMI RIVER TO FURNISH WATER POWER FOR OPERATING NEW MAXWELL PAPER CO.

Maxwell Paper Co. Nearing Completion

This new mill of the Maxwell Paper Company at Franklin, Ohio, which is closely affiliated with the Howard Paper Company of Urbana, Ohio, and the Aetna Paper Company of Dayton, Ohio, expects to be in production by January 1 of next year.

Takes Over Harding Mill

The Maxwell Paper Company has taken over the old Harding Mill of the American Writing Paper Company and is completely stripping the old mill of its antiquated machinery. A 152 inch Rice, Barton & Fales machine is being installed, with Pope Reel, Cameron Winder, Bird Screens, and the best possible equipment in every respect. The extensive water power facilities have been developed and improved by the installation of an up-to-date Hydro-Electric plant capable of developing more than enough power to run the mill.

To Make Sulphite Bond and Rag Content

The Maxwell mill will produce sulphite bond and rag content papers, and with its central location, low power cost, and wide trim should, it is said, produce a larger tonnage of bond paper at a more economical cost than any machine making this quality of paper.

The Aetna Paper Company and the Howard Paper Company, due to the greatly increased demand for its product, Howard Bond, has long felt the need of expansion and the Maxwell mill is the result of this demand.

Work Being Rushed

Maxwell Howard, who is president of all three mills, makes the statement that the work of completion is being pushed with all speed so as to relieve its affiliated companies of their heavy load.

The Maxwell Paper Company will have an investment of over two million dollars, which, it is felt, that market conditions and the general prosperity of the United States amply justifies.

Fort Frances Paper Co. Installs New Machine

The Fort Frances Pulp and Paper Company, Ltd., is installing at its Fort Frances, Ont., plant a new 224 inch Beloit Iron Works Fourdrinier Machine with Highland Engineering Works Electric Interlocking Drive, capable of a mechanical speed of 1500 feet per minute. Included in the paper mill extension are requisite facilities for finishing, and a new train shed.

The extension to the grinding department includes the addition of 16, 4-pocket grinders of a capacity of about 160 tons daily, the grinders to be mounted four stones on a line and each line driven by one 2800 h.p. Synchronous Motor.

To supply the power for these units, the company has under construction three hydro-electric developments on the Seine River, which is tributary to Rainy Lake, which hydro-electric developments will be connected with the mill at Fort Frances by a high tension transmission line, approximately 100 miles long. The hydro-electric plant will have an installed capacity of 26,000 kilowatt.

In addition to the above, there will be the requisite additions and alterations to the wood room, screen room, etc.

With the completion of this extension, the capacity of the mill will be 300 tons of news print paper daily.

MAIN BUILDING OF MAXWELL PAPER CO., AND PAPER MACHINE ERECTING CREW

Survey of Progress in the Industry

More Than Sixty Mills Inspected During Extended Tour of Pulp and Paper Plants—Physical Condition of Mills, Improvements Made or Contemplated, and Elimination of Waste of All Kinds Studied and Fully Reviewed

By W. G. MacNaughton, Secretary of the Technical Association of the Pulp and Paper Industry

During July and August, in company with R. S. Kellogg, secretary of the News Print Service Bureau, an extended tour was made of pulp and paper mills in Wisconsin, Minnesota, the northern peninsula of Michigan, Northern Ontario and part of Northern New York. Besides inspecting carefully more than sixty mills, several of the most progressive plants building papermaking machinery were visited, where some of the latest designs of paper machines were seen in the shops. In a few instances these machines were later seen during the course of erection in the new paper mills which are being built; particularly at International Falls, Minn.; Port Arthur, Ont.; Pine Falls, Man.; and Gatineau, Que., new plants or extensions to the existing ones were seen.

The mills visited were in the majority those making or using wood pulp in all forms, to make the corresponding grades of paper from news print and hanging to wrapping, book and writing paper. A few, however, were those using rags and making the finest quality of bond and ledger papers.

Range of Observations

In the plant inspections and conferences with the mill executives, superintendents, engineers and chemists, particular attention was paid to the physical condition of the mills, the improvements that were being made or in contemplation, and control methods looking toward greater economy of manufacture and the reduction of waste of all kinds.

In general the subjects under cooperative study in the Technical Association by its various standing committees, were borne in mind and their progress in the mills observed. Since at the great majority of the plants visited there were a number of members of TAPPI, the tour also afforded the opportunity of making their personal acquaintance and discussing the work of the Association with them and their associates. It was no small gratification to note the general recognition of the value of the Technical Association, not only in assisting to advance the industry but also as an engineering organization for those engaged in some branch of paper manufacture.

Wood Storage

During the past ten years a marked change is to be seen in the Lake States in the methods of wood storage. Due undoubtedly to the losses experienced by mills through deterioration of pulpwood by decay and the studies of the Forest Products Laboratory financed by the paper companies in recent years, a notable improvement in the wood yards was observed.

In general the pulpwood is now barked during the summer and stored in block piles after the bark has been removed. The piles are so arranged that they are turned over in regular order at least once a year. The storage ground is kept dry and free from refuse that would serve as sources of fungus infection causing recay.

At one plant where there had been gross neglect in regard to the points mentioned, a pile of more than 50,000 cords was seen that was practically a total loss. It was a pleasure to note, however, that steps were being taken that a similar situation could not again occur.

Two good types of wood storage equipment were seen, either of which could be recommended, depending on the plant layout. One is the high trestle or towers supporting an overhead conveyor to carry the wood to the storage and with the return conveyor in a tunnel underneath the wood pile. For reclaiming the wood on the outer area of the pile one plant is providing permanent cross conveyors in tunnels to feed the main conveyor, thereby largely avoiding the necessity for the portable conveyors that are more commonly used.

The other type, which in many ways appeared to be the better, is the movable inclined stacker to which the wood is delivered from a horizontal conveyor extending the length of the wood storage yard. For reclaiming the wood, portable conveyors are customary, delivering the blocks again to the main conveyor operating in the reverse direction.

At one of the new plants being built, the storage is divided into piles of 16,000 cords of wood, the piles being separated by a concrete fire wall. This was being done in part to facilitate checking the inventory as well as to reduce the fire hazard.

In most cases water lines for fire protection are arranged through the wood yard. Several have permanent systems of sprinklers by which the wood piles are kept wet by intermittent sprinkling or continually prayed with fine mist.

For storage of hemlock logs, largely used in Wisconsin particularly for sulphite and to a considerable extent for sulphate, the locomotive crane is the approved equipment. In one yard where the storage costs are low, double tracks are used in the yard, the locomotive crane using one track with the train of logging cars on the other, greatly reducing the time lost in switching. At a number of plants the logs were being peeled for the hemlock bark as well as to prevent sap rot in storage.

Wood Preparation

From observation it was evident that the continuous drum barker is the accepted equipment for barking wood in all classes of mills. In those making bleached sulphite and mechanical pulp for book paper, great care is taken that the blocks are thoroughly cleaned after passing through the drums. For this purpose hand operated disk barkers are used as well as hand axes.

Several ways of operating the drum barkers were seen and so far as the degree of cleanliness and brooming of the wood are concerned, they all seemed about equal, although there might be a difference in the output and the power consumption, as well as the maintenance cost of the equipment.

While most of the drums were operated wet, either with heavy showers or with the drum partly submerged, good work was seen where two drums were operated in series, the first dry and the second wet. From the standpoint of the fuel value of the drum refuse, this method appeared to have material advantages, as the bark from the dry drum may go direct to the furnaces and but a small amount of wet material remains to be pressed.

Two installations of the cam operated barking system were seen in operation. In comparison with the drums there did not seem to be any practical difference in results while in rate of output they appeared at a disadvantage.

At several places a type of portable rosser was seen that in spite of the enormous waste of wood in operation is evidently much used at loading points for the delivery of rossed wood to cars or boats. The large piles of rossing waste, consisting plainly of a larger percentage of wood shavings than of bark at one of the landings was evidence of its destructiveness. In the interest of economy of wood it is to be hoped that a drum barker of portable type might be developed.

Bark Presses

In a few plants it is still the practice either to run the bark into

the river or to haul it away for filling. In the vast majority, however, attempts are made to use it as fuel for steam raising and dispose of it at some profit. Installations were seen of four types of bark presses for the drum refuse and observation indicated that beyond question the plunger type showed superior results in the amount of water removed. The time factor in pressing appeared to be the determining point in getting rid of the water, especially in the case of bark from river driven and water soaked wood.

It was plainly evident where roll presses of any kind delivered bark with a water content of about 70 per cent or more that from the plunger type was nearer to 55 per cent. At one plant, however, in spite of 70 per cent water content with a roll press, the wood room was receiving credit for 200 tons of coal per week as the fuel value of the bark delivered to the steam plant.

Bark Driers

At two plants it was stated that installations of the Nordstrom drying tower were to be made in the near future. With these the pressed bark is to be dried with the heat in the stack gases of the boiler plant that now generally goes to waste. By this means the moisture content of the bark will be reduced to about 30 per cent, thereby materially increasing its fuel value.

Steam Plants

The trend in the paper industry is plainly towards the operation of the power plant as a separate producing department where the input is water and fuel with labor, and the output is steam and power.

In a number of established power plants as well as those now being built, it was noted that the tendency is for steam production at materially higher pressures than formerly, and for operation of the boilers at materially higher ratings. In general the new plants will operate at from 375 to 425 pounds steam pressure, with extraction turbines to supply exhaust steam at 100 pounds for the pulp digesters and 25 pounds for the paper machine driers.

In general all the improvements to be seen in central stations are reflected in the paper mill power plants. Coal weighers, water meters, all types of control and measuring instruments, mechanical stokers, pulverized fuel or fuel oil, modern design of furnaces, air preheaters, and steam accumulators are being recognized as worthy of the attention of paper mills. At the same time a vast improvement is to be seen in the training and experience of the engineer in charge. In most cases he is technically trained with several years of experience in central station work.

In localities where electricity is abundant or where dump power is available, electric steam generators are in general use. Frequently also where a large block of continuous power is contracted electrical boilers are used for the weekend steam load.

In a few plants it had been found advantageous to grind wood by electricity produced by steam during a part of the year when the lower cost seasonal power was not available.

In recent years chiefly through the work of the News Print Service Bureau and a study of their cost figures, paper mills realizing that 40 per cent or more of the cost of conversion of chemical pulp and paper is steam for power and process, have awakened to the importance of the steam plant instead of regarding it as formerly, as a necessary adjunct to the manufacturing operations.

Sulphite

A two days visit was paid to the United States Forest Products Laboratory, Madison, where much valuable study has been given for several years to the chemical pulp processes. Conferences were held with C. P. Winslow, Director, John D. Rue, in charge of the pulp and paper section, and his staff, and we were accompanied on our trip of inspection through the Wisconsin mills by J. D. Rue, C. E. Curran and W. H. Swanson. On this portion of the trip particular attention was given to the cooking control methods in use as well as to the yield and quality of the pulp. In a number of the plants visited in Wisconsin and elsewhere, it was found that the Laboratory recommendations regarding the temperature control during digestion were being applied and that the predicated results were corroborated. In a number of instances it was stated that a material increase in the yield has been experienced with improvement in quality over the previous methods in use. The general practice in the progressive mills is also to test the pulp from each digester blown for bleach consumption, the unbeaten and beaten strength, freeness, ash content, pitch content and color. This complete record with a study of the cooking acid and the cards of the recording control instruments is considered of great value in securing a uniform product.

At one plant was seen a Fresk digester filling apparatus and it was stated that as a result of its use the yield of pulp per cubic foot digester space had been increased by 25 per cent without any difficulties of circulation or blowing.

In a number of plants color standards are regularly used to determine the proper endpoint at which to finish the cooking. In some cases instead of the usual coffee mixtures recommended in Vol. III of Manufacture of Paper, permanent color standards have been developed and used in conjunction with a color comparator instrument which gives a numerical reading of the color density.

A number of plants were operating satisfactorily without digester relief coolers, using instead the Decker process, relieving the liquor and gas into a digester, that had been filled with chips. The net result of this practice is a material decrease in the amount of steam required for cooking with some evidence of an increased yield of pulp.

The tendency appears to be towards a larger cooking time, of ten hours or more with a yield of pulp more closely approaching the theoretical 55 or 58 per cent rather than the shorter periods of seven or eight hours with a yield of less than 45 per cent.

While no instances of chip weighers were seen it is evident, too, that as soon as a satisfactory weighing device for existing plants is developed it will be readily adopted. One plant in the United States and one in Canada use a conveyor scale to get the weight of chips delivered to the digester chip storage and through a weekly check get an approximate yield figure. It is believed, however, that the weighing device should be between the chip bin and the digesters so that the weight of wood going to each digester could be known.

Acid System

In the vast majority of plants visited rotary sulphur burners with sulphur melters and Jenssen limestone towers were found. A few mills making pulp of high quality use the milk of lime absorption system, employing lime of high magnesia content. In one such was seen a refrigeration plant to cool the water going to the system and we were told of several others with similar refrigeration systems applied to cool the water for limestone towers during the summer months.

While wooden tanks are in most general use a few plants have acid tanks of concrete. In one very large mill in the course of erection it was stated that concrete tanks had not proved satisfactory and in consequence wooden tanks were being installed. Considering the comparatively short life of wooden tanks especially for reclaimed liquor it is surprising that steel tanks lined with rubber or other acid resistant material have not been used.

If the quantity of cymene recovered at one plant cooking spruce and jackpine is a fair example it would seem that a large quantity of a valuable by-product is going to waste. At this mill the crude cymene is refined by distillation and finds a ready sale as a substitute for turpentine. It has also been used by the superintendent and chemist as a motor fuel mixed with gasoline.

Screening Sulphite

In plants connected with news print mills it has long been the practice to use centrifugal screens following the knot screens. In those making sulphite for the better grades of wrapping paper

and especially where the product is to be bleached it has been generally held that diaphragm screens with slotted plates are necessary if a clean pulp is desired. The trip of inspection indicates that the diaphragm screen is passing rapidly even from this, its last stronghold, since the latest design of centrifugal screens have been proven satisfactory in delivering a clean pulp ready for the bleachers. In one plant was seen a single centrifugal screen that had replaced five lines of diaphragm screens, occupying less than one-twentieth of the space and with other attendant advantages.

Bleach Plants

For the present the decided trend in bleaching practice is toward high densities and low temperatures. There are at least six different designs of equipment for bleaching at high density besides low density and two-stage bleachers and according to observation and report they all appear to do satisfactory work. In spite of this, however, perhaps because of the number to choose from, the industry seems to be still looking for something different. It may be that a continuous bleacher is desired and some time the practice will be standardized on one yet to be developed to take the place of all the various batch equipments.

One plant visited reported that the bleached pulp being made gave paper of higher strength than the unbleached and that the loss in bleaching is less than one per cent. In view of the more general shrinkage of 8 per cent or more and a weakened product it is plain that considerable more study to bleaching is needed. The use of bleached sulphite for viscose rayon and its requirements of quality and uniformity has also stimulated interest in bleaching practice through the entire industry.

In washing the pulp after bleaching, instead of or in combination with drainers it is becoming the increasing practice to use counter current washing equipment or more rarely the suction filter similar to that used as a thickener or stock saver.

Rifflers

Observation would indicate that the riffler is again coming into favor especially in plants that are changing to higher grades of paper. It is evident, however, from even a casual examination of the operation of a number recently installed, that considerable study of the principles underlying the riffler is still needed by their designers. Some of these points are undoubtedly the density of the pulp suspension, the speed of flow, the distance of travel and the depth of the troughs as well as the spacing of the baffles, with convenient means of cleaning a part without interfering with the continuity of operation.

Sulphite Spent Liquor

Particularly in Wisconsin but in general throughout the United States considerable study is being made of possible large uses for spent sulphite liquor. One reason for this attention is the realization of the fact that the weight of the solids in solution being wasted approximately equals that of the pulp produced. Another and more impelling one is undoubtedly the increasing activity against stream pollution in the various paper making states.

To mitigate the stream pollution one of the Wisconsin mills located on a stream of small flow is arranging an impounding basin for the spent liquor so that it may be delivered to the stream without injury at a constant rate after dilution and aeration. At the same time it is generally believed that if a profitable use is to be found, it will be through evaporation of the liquor and using the concentrated material as a fuel for steam generation. To accomplish this result it is also generally held that a change both in liquor making and pulp washing may be necessary. Following the practice of sulphate mills, in order to increase the concentration of the spent liquor thereby reducing the cost of evaporation, it may be possible to use part waste liquor in making up the cooking acid and also to change from blowpit washing to diffusers or continuous filters.

With the growing pressure toward stream purification through the country, the sulphite mills are likely to be in increasingly difficult position unless means are devised to utilize the waste liquor now almost entirely discharged into the streams.

A few plants evaporate sufficient of the waste liquor to supply adhesive for pasting the wrappers in finishing the shipping rolls. A number also have gone into the evaporation on a fairly large scale, producing material for corebinder, briquetting, road treatment and similar uses. As intimated, however, the possible market for such materials is wholly inadequate for but a very small portion of the total waste liquor.

Sulphite Screenings

In the majority of sulphite mills the fine screen rejections are refined either with a special jordan or with a pebble mill for use in mill wrappers or coarse wrapping paper. The product of the knot screens in general is wasted although there could appear to be no valid reason for doing so.

In the plants visited there was the widest variation in the quantity of screenings and knots. Invariably where the cooking time was decreased the quantity showed a very evident increase, in a few cases approaching 8 per cent.

At one large plant visited a most astounding spectacle of waste was seen in the accumulation of sulphite screenings filling a slough alongside the mill that was nearly 40 acres in extent and in places more than 12 feet deep. This represented the screenings of several decades mixed with considerable good pulp—a veritable mine of paperboard material on which a board mill of 20 tons capacity has operated for several years without any sign of decrease.

Sulphate Pulp Mills

On the inspection tour, eight sulphate mills were visited. All of them were being efficiently operated and producing an excellent quality of product. While in most of them jack pine was the chief species of wood used, in one plant an excellent pulp and paper therefrom was being made from 100 per cent hemlock.

Recovery of turpentine where pine was the species digested is generally practiced.

At practically all the plants continuous filters are used to wash the lime sludge which in nearly all cases is disposed of to the nearby farmers and used by them as a fertilizer.

Considerable interest was noted in the recovery room practice whereby steam is produced from the burning of the black liquor.

Though not much is said about the details of procedure, an increasing quantity of bleached and semi-bleached sulphate pulp is being produced, the aim being to secure a white paper having the highly desirable qualities of Kraft paper.

With the increasing degree of refinement on the part of the public it is to be expected that a deodorant for sulphate mills may soon be demanded. A number of the more progressive companies realizing this are endeavoring to mitigate the condition. It is understood that by filtering the offensive gases through chips which are afterwards digested much of the odor is avoided. In all of the plants visited, however, it was impossible to mistake their character long before they were in sight.

A marked variation was found in the period of cooking, some mills having about 2½ hours and others 6 hour cooking cycles. Since all the mills make the same final product cooperative study to find the most desirable period from all standpoints of yield, quality and cost of production, would be advisable.

In digester design the upright, stationary type and the tumbling digester seem to be on a par as to preference. Indirect heating and circulation in the case of stationary cookers is the general practice.

Recovery Plant

In the equipment and operation of the recovery plant great diversity was noted. Although the tendency appears to be towards multiple effect vacuum evaporators, disk evaporators are still largely used. In some plants both types are in use and where two or more black ash rotaries and smelting furnaces are employed, waste heat boilers are being used instead of disk evaporators.

There is a great variety of smelting furnaces, some mills having two or more of the different types, which are unlike not only in design but also in construction material and in the arrangement of auxiliary apparatus. This situation is doubtless because of the relatively short life of the smelting furnace in most mills and the consequent high maintenance cost of this equipment.

It would appear very valuable if the sulphate mills in cooperation with producers of refractories would undertake a thorough study of smelting furnaces of all designs, lined with different materials and operated in different ways, so that the best type could be definitely determined.

Mechanical Pulp

The choice of grinding equipment, whether magazine, continuous or pocket type, seems to depend largely upon individual preference as well as the size of plant, conditions of power, and the quantity and quality of product desired. Excellent installations of all three types were seen. In some cases especially good results were being obtained with motor driven pocket grinders.

In one large pocket grinder room, to get a check on the quantity used, the wood is racked on skids for measurement and delivered to the grinders by an electric lift truck, one man and truck keeping 38 grinders supplied with wood. In another was seen an application of the Briner economizer to remove the vapor from the grinders and utilize its latent heat.

Where pocket grinders are in use, especially the 4 pocket type, it is the general practice to grind with three pockets, keeping the fourth in reserve, throwing it on when one of the others require filling. In practically all plants visited, whether operated by water power direct or by motors, load governors were in use, showing the growing appreciation of the value of power.

Substantial progress is being made in the development of artificial pulpstones. Two mills that have had them in use in magazine grinders for over two years report that they have approximately ten to twelve times the life of a natural stone, the rate of grinding, the power consumption per ton and the quality of product being the same.

In control of the grinder operation the established practice is to make regular tests of the quality of the pulp. In most plants the control instrument is the freeness tester of one of the standard designs, in addition to the blue glass plate. In one mill a stereopticon is used to examine samples of pulp in more detail.

As the freeness test is most largely depended upon, one mill has built a laboratory screen and decker so that the stock from each of the grinders can be tested in the same condition as the mixture of pulp at the deckers.

The study that has been given to the character of the pulpstones with the proper dressing and the pressure of grinding is reflected in the lowered power consumption per ton of pulp and a material increase in daily production per stone with a minimum of screen rejections.

Screening

Selective screening of the pulp, using knot screens in addition to bull screens followed by fine screens and tailing screens, the development of centrifugal screens of nearly three times their former capacity as well as the growing recognition of the value of the screenings and their utilization, were the oustanding points noted in the ground wood mills. While a few plants refine the screen rejections to first grade pulp or for use in wrappers, it has been found that where the screenings are collected and the quantity is known the first result noted is that by greater care in the grinder operation they are materially reduced in amount. Several mills making paper board use all their own and purchase the screenings from the nearby plants.

From reports received, the quantity of screenings normally produced is from 3 to 5 per cent of the pulp production. To refine them to first grade pulp requires from 25 to 30 hp. per ton of screenings. In other words it requires from 1 to 1¼ hp. additional per ton of pulp to turn all the wood into pulp for the paper machine.

It is unfortunately true, however, that many plants still waste the screenings, usually into the rivers. At one plant visited there is estimated to be 40,000 cubic yards of material in the bay, chiefly groundwood screenings representing the accumulation of but a few years that will have to be dredged in order that shipping may not be interfered with.

Thickening

In addition to screens of materially larger capacity, a recent important development in pulp mill equipment has been the high suction filter for thickening of the screened pulp. Besides the economy of floor space in comparison with the number of deckers needed there is the further and important advantage in that there is a minimum amount of fine pulp in the effluent.

This represents one of the first steps taken by the builders of auxiliary pulp machinery to keep pace in the productive capacity of the paper machines.

A suction filter now thickens nearly 60 tons of pulp per day for which nearly ten deckers, each taking about the same space, would ordinarily be needed. For several years the absurdity has been felt of deckers and screens of 5 and even 25 tons per day supplying a single paper machine of 125 tons per day.

Storage of Slush Pulp

The study of the cost of lapping and storage of ground wood pulp and the additional cost of returning it to the mill and again defibering over, using slush pulp, has brought about at least two important developments in pulpmill operation. The first and most obvious has already been mentioned where a plant, using seasonal electric power for grinding, produces the necessary current by steam during the rest of the year.

The other was noted in a locality where low cost electricity is available during the night. In order to have the advantage of the power and also of slush pulp, storage tanks of sufficient capacity to carry the twelve hour demand have been installed and all or most of the grinding is done at night. The pulp stored is the screened and thickened pulp ready for the paper machine. The tanks are of steel, approximately 30 feet in diameter and 30 feet high.

In the storage of lap pulp at one plant a treatment is given of sodium fluoride solution as recommended by the Forest Products Laboratory to prevent the development of the fungus of decay.

Paper Mills

In all the plants visited, with but a few exceptions, major improvements had been recently made or were in progress. In general the paper mills as well as the other departments were a credit to the industry—clean, well ventilated and well lighted basements as well as the machine rooms.

In most cases, too, the storerooms and warehouses were well arranged and the stock of material piled in orderly form so that inventories could be readily checked.

Mechanical Treatment of Stock

From the use of rags it was long believed that all papermaking materials required two different kinds of treatment, hollander action for defibering, shortening and hydration, and the refiner action to complete the treatment. According to this practice the burden of the work was on the hollanders and only a relatively small part on the jordans.

It has taken a long time for the industry to realize that with the use of wood pulp it has a material of sufficient shortness of fiber ready for papermaking and all that is required in general for the various grades of paper is to give it a certain degree of hydration. The tendency at the present time is consequently toward making the entire mechanical treatment more and more a continuous operation by the use of jordans and away from the batch treatment given in hollanders.

MATHIESON Chemicals

Beating the Market

ON basic commodities such as Mathieson products, market price bears a definite relation to cost of production and distribution, with a fair return to the producer.

If a manufacturer can afford to go below a fair market price for his product, it is time for the discriminating buyer to wonder why and to make certain that the service he is being offered will measure up to his exacting standards. Someone must pay the difference in price in such cases; it is usually the buyer who pays it in the end and often many times the amount.

Mathieson products are merchandised on the sound basis of quality and superior service—to buyers who may have tried the doubtful economy of "beating the market."

The MATHIESON ALKALI WORKS *Inc.*
250 PARK AVE. NEW YORK CITY
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Caustic Soda ~ Liquid Chlorine
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Anhydrous Ammonia

EAGLE THISTLE PRODUCTS

Soda Ash ~ Bleaching Powder
Modified Virginia Soda
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Deal Direct with the Manufacturer

In the case of news print the hollander has definitely gone into the discard except for the defibering of broke. For news the jordan is also used scarcely at all. In a good many mills a jordan is only used as a refiner in conjunction with the broke beater, though in a few the groundwood is also passed through a jordan before going to the mixing system, especially where stored pulp has been shredded.

For defibering moist or dried sulphite for the mixing system it is customary to use a hollander equipped with an extractor making it continuous in operation. For groundwood laps a similar equipment is sometimes used but more frequently the defibering is done by shredding the pulp into a tank furnished with agitators.

In many book paper mills, especially those making their own soda pulp or reclaimed magazine stock, a similar practice is followed except that the mixed stock is passed through one or more jordans for hydration before going to the paper machine.

As a means of securing uniformity in the result, in one mill visited the density of the stock to the jordans is controlled by a consistency regulator.

In wrapping and bag paper mills using kraft and sulphite pulp, hollanders are used very little, if the modern practice is followed. There is generally a hollander or two in which the color and chemicals are added but the real work is done in several jordans in parallel or sometimes in series furnished with thick bars and driven by motors of 200 to 400 hp.

In paperboard manufacture the same decrease in the use of hollanders and a dependence on jordans is to be seen. Here, too, was noted the extended use of continuous breakers for defibering the waste paper in preparation for the jordans.

In the case of rag papers, although it is some years ago that S. R. Wagg used a jordan with a special filling for the treatment of rags very largely instead of hollanders, since his death it is understood that the jordan has been relegated to its old place as a refiner. Nevertheless it was shown that it could be done so that with the growing tendency towards a continuous process in mechanical treatment Wagg's practice is likely to be revived.

In making greaseproof paper it was long believed that hollanders with stone rolls and bedplates were an absolute necessity and that several hours' time in the hollanders was an important factor. It is known now, however, that several mills, in Europe at least, make greaseproof paper of satisfactory quality with jordans almost entirely and use at least no more power than with beaters.

One plant making semi-parchment paper from strong sulphite uses the rod mill, which is a recent development of the Forest Products Laboratory. The application of the rod mill, in common use in the mining industry, was the subject of a paper by J. D. Rue at the recent Fall meeting of TAPPI at York, Pa., and published in Paper Trade Journal September 16, 1926. With this machine it is stated that the power consumption per ton of paper is not much in excess of 4 horsepower days while with hollanders or jordans for equal results it amounts to more than ten times this amount.

In view of the large proportion of the power applied to hollanders and jordans that is lost through friction and the fact that in a rod mill the only power required is that applied to turn the unbalanced part of the cylinder and its contents it is to be expected that it will be received with interest in the industry.

Beater Control

Where hollanders are chiefly used for the mechanical treatment and when driven by individual motors, uniformity of result is secured by the aid of ammeter readings. When belt driven an application of the mechanical time recorder to chart the progressive lowering of the roll on the bedplate has been developed that has been of great assistance.

In a number of mills the freeness test is regularly used to check the result of the beating.

The use of hydrogen ion indicators is becoming general as a material aid towards uniformity of sizing quality as well as economy in the use of alum. It is becoming recognized that many apparently unexplainable changes in the product can be traced to variations in the hydrogen ion concentration of the water and stock.

Paper Machines

It was of greatest interest to see in operation the widest machine in the world—245 inches—also the plant that will house several of still greater width—270 inches—as well as two machines in operation at what must be about the greatest speed attained regularly—1,050 feet per minute. It was also rather remarkable to see one of these high speed machines being operated without deckle straps. The tendency in regard to the fourdrinier part is evidently along the present line of fashion in dress for women. It is difficult to see where they will stop since in both the limit must be nearly reached in the removal of accessories.

The removable fourdrinier for quick change of wires, the high slice with level wire, anti-friction bearings, circulating oiling systems, the suction couch, at least one and with a tendency towards two suction presses. Suction web carriers on presses, or compressed air, carrying ropes for the driers, uniform speed reels, hoods on the machines with waste heat economizers, may all be regarded as standard equipment and all are developments of very recent years.

In many mills some type of felt washer or conditioner is used to avoid the necessity of shutting down to wash felts. Quite a few continuous wire cleaners were noted as well as the device either for oscillating the flat boxes or to oscillate the wire, besides many machines without deckle straps.

The trend of development is on the one hand to simplify the equipment and on the other to make the machine as nearly continuous and automatic as possible.

In a few news print mills considerable attention is evidently being given to the question of water removal involving the study of the wet press operation and the condition of the felts. To check the work done by the presses, the water removed at each press is measured and regular tests are made of the web entering the drier stack to determine its uniformity and water content.

Paper Machine Drives

For paper machine drives the strong tendency has been towards individual motors for the sections and until recently practically all the new machines were so equipped. From a visit to two of the leading shops building paper machines, and conferences with engineers connected with others, it was evident that much higher quality of machine work is now being done in machine building than formerly. Some of the most recent high speed machines have in consequence returned to the mechanical drive and a single motor to drive the entire variable part. There is, however, an important improvement in that the bevel gear with wooden teeth is replaced by accurately cut steel helical bevel gears running in an oil bath. In addition magnetic clutches are used instead of those of mechanical type. With these improvements as well as the improved machine work throughout it is believed that the trend against the mechanical drive will be materially checked, especially where the paper machine is operated at a moderate speed.

Another important development in the drive is the application to paper machines of the hydraulic variable speed gear originally applied to raising and lowering naval guns. While it was first used several years ago in England on paper machines for the variable drive it is now coming into fairly general use in this country. Although here at first it was used with a single induction motor instead of the older types of speed changers, a new paper machine recently installed is equipped with a hydraulic variable speed gear on each of the sections. For the slower running machines, particularly those operating at a wide range of speeds, it is said to be very efficient.

At the dry end, as already noted, hoods are now the rule with an increasing number of waste heat economizers whereby the latent heat in the vapor is applied to heat the incoming ventilating air.

BIRD MACHINERY

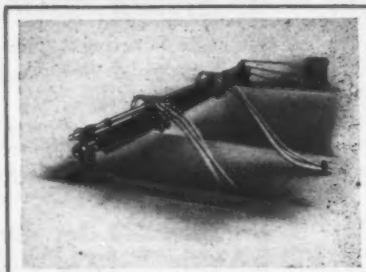
THE BIRD SCREEN
The Standard paper screen of the world. 20,000 tons of paper pass through Bird Screens daily.

The Bird Machine Company is organized to help pulp and paper makers produce uniformly good pulp and paper continuously at high speeds, without waste.

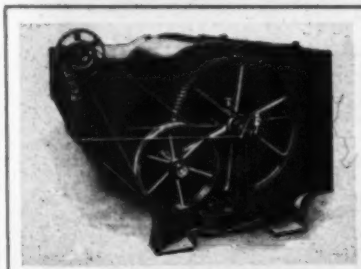
The items of Bird Machinery illustrated have been developed as a direct result of this policy. They strengthen the "weak links" in the long chain of production.

Our engineers are ready and willing to go over your production problems with you. They will recommend Bird Machinery only when they can show you definite, worth while improvements and savings and you may find that their experience in helping others will help you, too.

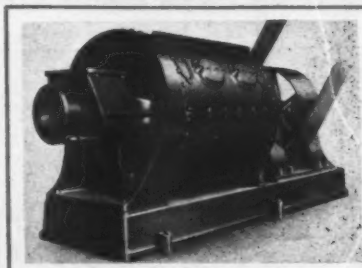
Giving us this chance to help you puts you under no obligation. May we hear from you?



THE VICKERY FELT CONDITIONER
Eliminates shut-downs for felt washings. Keeps the felt in uniform condition throughout its life.



THE BIRD SAVE-ALL
A common sense pulp saver and white water filter for efficient recovery at low cost.



THE BIRD PULP SCREEN
Produces a large volume of clean, strong stock at a great saving in power and floor space.

THE VICKERY DOCTOR
For keeping every roll clean. The flexible doctor that always hugs the roll and never scores.

THE PULMAX DRIVE
A short center drive which saves power, belting, floor space and maintenance expense.

THE ALEXANDER YOUNG CHILD WIRE CLEANER
Eliminates shut-downs for scrubbing machine wires.

BIRD MACHINE CO. South Walpole, Mass.

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Moisture Content Control

A very important development in drying control apparatus was seen in operation on two machines making wrapping paper for bag manufacture. By its use the moisture content of the finished paper entering the calender stack is controlled at any desired point, at the same time supplying a continuous record. Since in all grades of paper uniformity and fairly high moisture content is of great importance regarding quality as well as being a factor worth considering as to production and cost, it is to be expected that this apparatus, which has been put on the market by a well known firm of instrument makers, will be widely applied.

Another development of somewhat the same kind but quite different in principle in that it makes use of radio current not only giving a continuous record of the moisture content and the basis weight of the paper but also serving to keep both at the desired point.

On the drier part a number of new machines being built for a Canadian mill have the cylinders driven by worm gears with the driving motors placed on top of the rear drier frame. These machines are also unique in having the hood and air distribution system built in as part of the machine and with the return run of the top drier felt above the hood.

It is particularly worthy of note that an installation of the Minton vacuum drier is now being made on a news print machine of 152 inches width, having 21 drying cylinders inside the vacuum chamber. It is designed to dry paper at 850 feet per minute using 5 pounds steam pressure.

Observation of a great many paper mills and noting the attachments and in many cases complicated apparatus for the purpose of insuring circulation of steam through the drying cylinders and the removal of air and condensate, one is forced to conclude that there is fashion in drying systems. In a number of mills visited the equipment being thrown out of one was being put in at another and vice versa. In many others no special attachments were used and apparently with equally good results. One was forced to the impression that in regard to such accessories for the paper machines the owners are like many who have Ford cars and equip them with some of the various attachments invented for them. Each special kind of attachment has its advocates while the car is said to operate quite as satisfactorily and economically without them.

Finishing and Shipping

In finishing newsprint rolls, a number of mills use concentrated waste sulphite liquor as the adhesive in making the paper cores and also to paste the wrappers and headers for the rolls.

In one mill excellent use was made of an overhead trolley with an ingenious sling to save the labor of several men in upending the rolls and transporting them to the cars for loading.

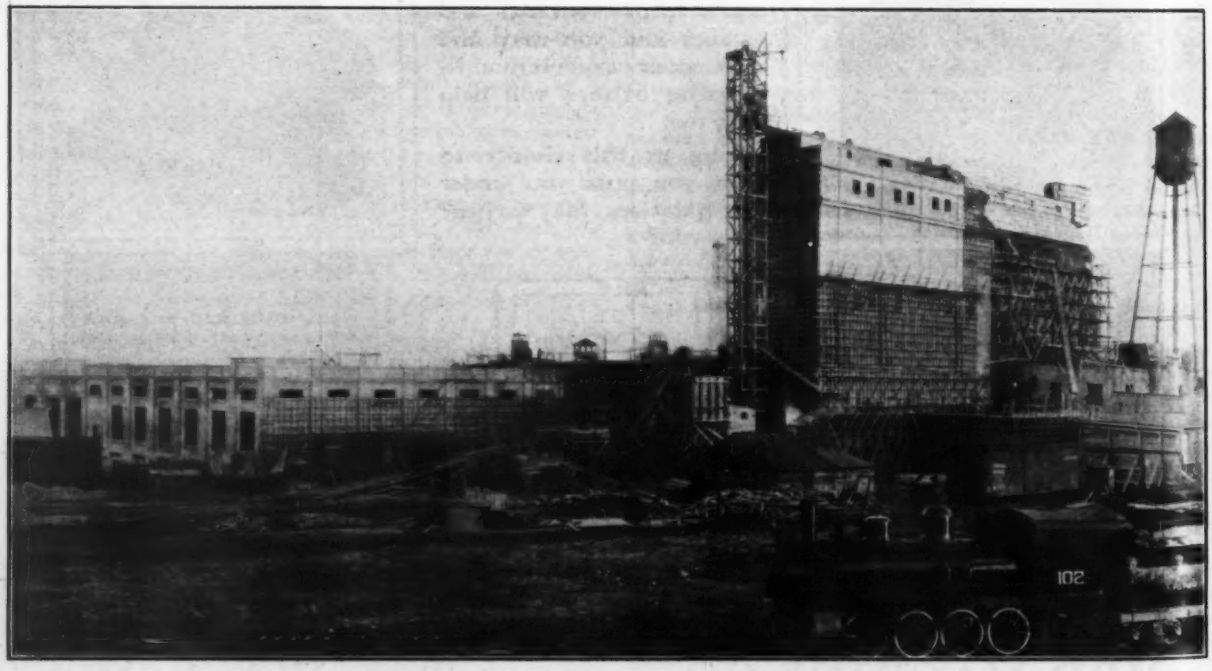
In large plants electrically heated clamps operated by hydraulic pressure or compressed air are used to apply the headers while the rolls are horizontal. In several both large and small plants a special revolving and lifting electric truck was seen giving excellent service for transferring the rolls from the finishing room and placing them in position in the cars. By its use in one plant it was stated that the loading cost had been cut into half over hand trucks.

The use of steel bands to hold the shipping rolls in position in the car was seen and from observation and statements received the system is evidently economical and satisfactory.

White Water

In the mills visited with few exceptions very material progress has been made in decreasing the white water losses. In general the problem has been attacked in the right way, keeping as much of the water as possible in its proper function as a conveyor and using it back in the system after the fiber and filler has been removed and returned to the process.

In most plants the process water is carefully kept separate from the floor washings and by means of calibrated weirs and liquid level recorders a measurement is obtained of the final effluent. With a simple automatic sampling device a proportionate



SPRUCE FALLS PULP & PAPER CO., KAPUSKASING, ONT.

View of plant looking South. Compare digester building with other photograph. The nearer portion is the new extension. The staging on the older part is for the development of pilasters on the side wall to conform with the new design. These views show how the New York Times wishes to have beauty of architecture as well as utility in the buildings.

Profit by Dowd's 70 year knife-making experience

You are always to be the Judge of the Quality of Dowd Knives

Beater engine roll bars and bed plates of plated stock, solid steel, heat-treated steel, vanadium steel.

Cluster beater roll filling for making strong paper.

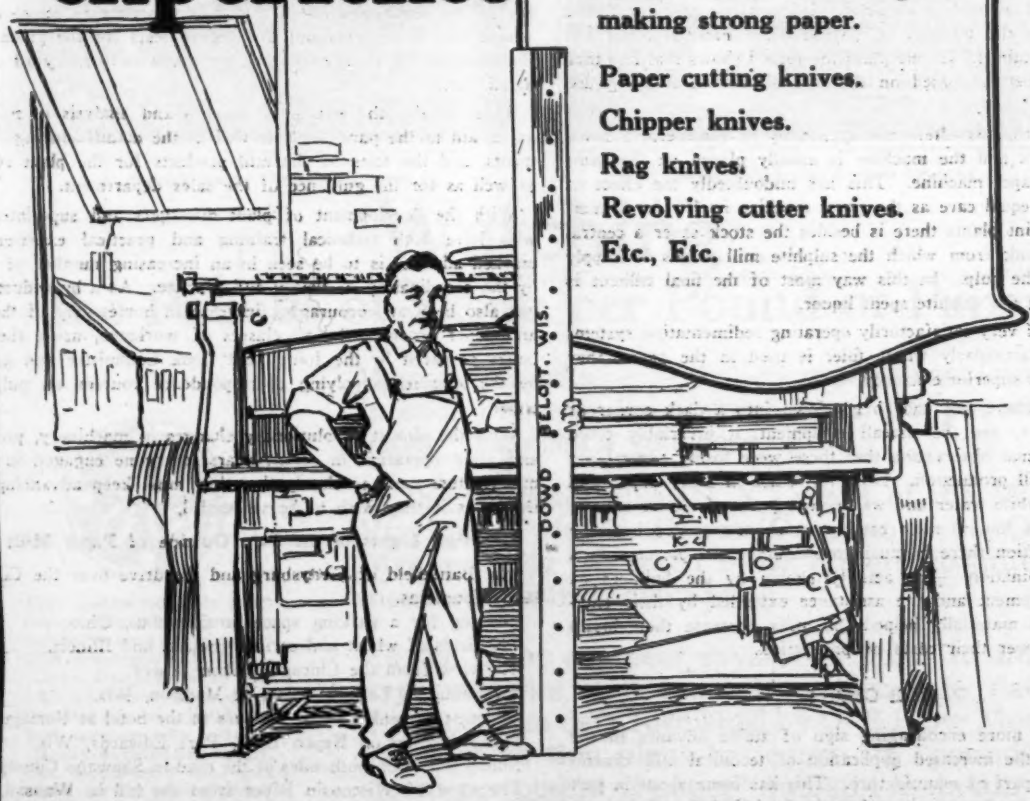
Paper cutting knives.

Chipper knives.

Rag knives.

Revolving cutter knives.

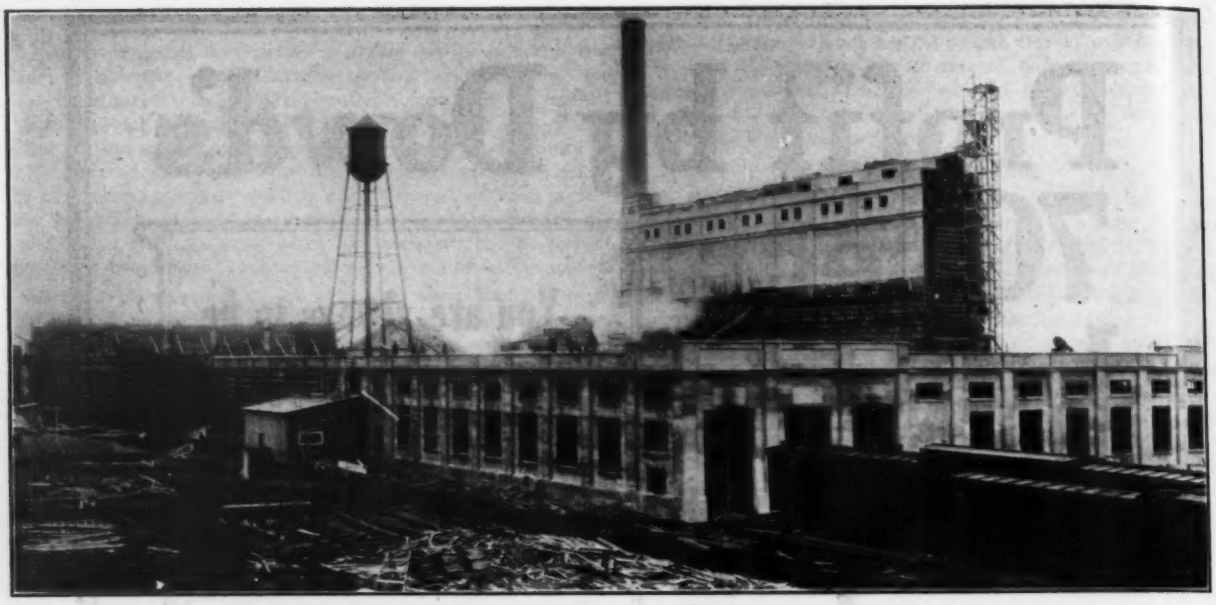
Etc., Etc.



R. J. Dowd Knife Works

Makers of better cutting knives since 1847

Beloit, Wis.



SPRUCE FALLS PULP & PAPER CO., KAPUSKASING, ONT.

View of plant looking west. The digester building as completed shows the altered wall and roof design with cornice and pilasters. Compare with the other view which shows the change in progress. The buildings in the foreground are warehouses and screen rooms.

sample of the effluent is obtained. On analysis and calculation from the flow the quantity of papermaking material being lost is regularly obtained. In one plant the record shows that less than half of one percent based on the mill production is being discharged.

Suction continuous filters are apparently in considerable favor as stock savers and the machine is usually placed on the same floor as the paper machine. This has undoubtedly the effect of getting for it equal care as the paper machine itself. In a number of newsprint plants there is besides the stock saver a central white water tank from which the sulphite mill draws its supply for washing the pulp. In this way most of the final effluent is that containing the sulphite spent liquor.

A number of very satisfactorily operating sedimentation systems were seen. Particularly where filler is used in the paper, they have materially superior efficiency.

In general where one had to go down into a dark corner of the basement to see the saveall equipment, it invariably could be seen by casual observation that these were losing several per cent of the mill production. However, since in every paper mill the reuse of white water and waste saving was an active subject of conversation and in most cases it was accompanied by some constructive action there is much to encourage the propagandists of waste elimination. The activity shown by the builders of clarifying equipment and the assistance extended by their engineers has also materially helped the mills decrease their losses and thereby lower their costs of production.

Mill Control

There is no more encouraging sign of stable advance in the industry than the increased application of technical mill control as an integral part of manufacture. This has come about in part through pressure of competition but chiefly, it is believed, because of the broader practical experience of the technical men as well as an appreciation by plant managers and superintendents of the importance of definite control in manufacture.

Instead of confining the technical work to analysis and testing done in the laboratory it has now very largely become an integral part of the plant operation. In most of the mills there is a member of the technical staff in the chief departments on each shift whose duty is to carry out the control tests for the guidance of the foreman in charge, thereby to insure uniformity of quality at all times.

There is also the testing of supplies and analysis of materials as an aid to the purchasing as well as the manufacturing departments, and the tests of the mill products for the plant records, as well as for the guidance of the sales department.

With the development of plant managers and superintendents who have both technical training and practical experience, a marked advance is to be seen in an increasing number of plants by the coordination of theory and practice. As a byproduct there has also been an encouraging increase in home-study of the pulp and paper processes by all classes of workmen, using the textbooks prepared by the Joint Text Book Committee and assisted by the agencies supplying correspondence courses on pulp and paper.

With the almost revolutionary changes in machinery, processes and plant operation in recent years, everyone engaged in paper manufacture can see clearly that they must keep advancing with the times if they wish to be successful.

High Lights of the Trip Outside of Paper Mills

The Battlefield of Gettysburg and the drive over the Cumberland Mountains.

Looking for a parking space in Columbus, Ohio.

The fields of wheat and corn in Indiana and Illinois.

The view from the Chicago Tribune tower.

Swimming in Lake Mendota at Madison, Wis.

Bouquets of pink Ladies' Slippers in the hotel at Portage, Wis.

Motor boating on Nepco Lake, Port Edwards, Wis.

Stump fences on both sides of the road in Shawano County, Wis.

The view of Wisconsin River from the hill in Wausau, Wis.

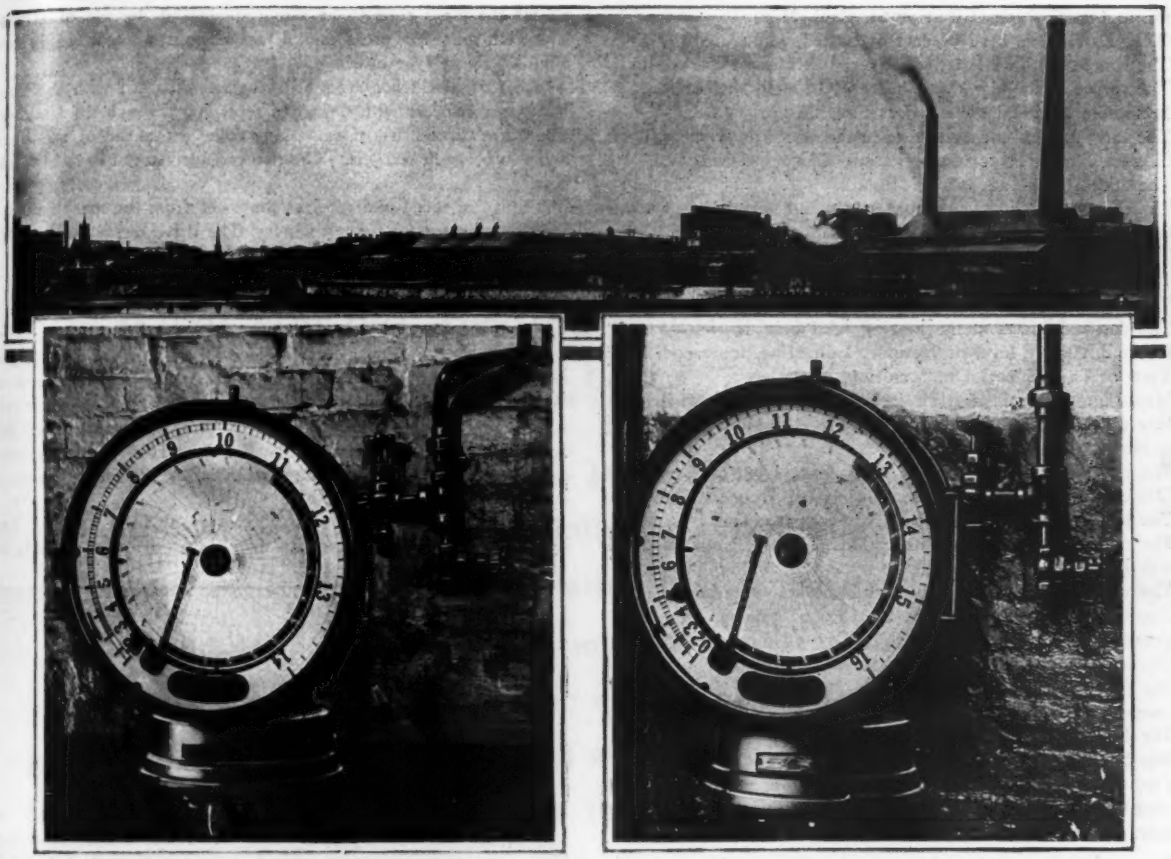
The open fire July 13 at Coon's Resort on Trout Lake, near Woodruff, Wis.

Camp Mishike, Vilas County, Wis.

The odor from the sulphate mill in the Elk Hotel, Ontonagon, Mich.

The beautiful Bloomer Valley below Eau Claire, Wis.

The view of the Mississippi Valley near Winona, Minn.



Metering steam to Soda Liquor Room

Metering steam used for Soda Bleaching

Watching
the Pounds of Steam per Pound of Paper

Without knowing exactly how much steam is used *in each process*, "pounds of steam per pound of paper" becomes a valueless figure.

In the Mechanicville (N. Y.) plant of the West Virginia Pulp & Paper Company, 50 G-E Mechanically Operated Flow Meters accurately measure steam consumption.

As the plant engineer says—"In order to make improvements you must have accurate data". The accurate data furnished by G-E Flow Meters has enabled this plant to reduce its "pounds of steam per pound of paper" and still maintain the high quality of paper for which it is noted.

Flow meters not only point out economies in steam consumption, thus reducing coal bills and required boiler capacity, but also make possible uniformity of product. General Electric, builder of both mechanically and electrically operated flow meters, can recommend the right meter for the job. Consult the G-E specialist in your locality.

37-42

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL PRINCIPAL CITIES

Dr. and Mrs. Raphael Zon at St. Paul, Minn.
O. L. E. Weber's herd of deer at Sartell, Minn.
The source of the Mississippi River, Itasca State Park, Minn.
The spruce in the big swamp south of International Falls, Minn.
Minnesota National Forest, Cass Lake, Minn.
The largest open cut iron mine in the world at Hibbing, Minn.
Cloquet Forest Experiment Station, Cloquet, Minn.
The aerial bridge at Duluth, Minn.
The churches with onion shaped spires and detached bell towers between Winnipeg and Pine Falls, Manitoba.
The new town of Pine Falls, Manitoba.
The Sleeping Giant at Fort Williams, Ont.
The U. S. Customs at Pigeon River, Minn.
The doe and fawns at the logging road near Hurley, Wis.
In the 2,500 foot level of Newport Iron Mine, Ironwood, Mich.
View of Lake Superior at Munising, Mich.
Manistigue River in a strait jacket at Manistigue, Mich.
Fire patrol planes "tuning up" opposite Algonquin Hotel, Sault Ste. Marie, Ont.
The desolation around Copper Cliff, Ont., from open roasting.
"Mine host boniface" of Devonshire Hotel, Iroquois Falls, Ont.
The banquet at the Staff House, Kapuskasing, Ont.
The radio concert in the Club car of C. N. R., Kapuskasing to North Bay, Ont.
The view of the Ottawa River at Mattawa, Ontario.
The Centennial Celebration at the City of Ottawa.
Crossing the Ottawa River on the L'Orignal ferry.
The illuminated cross on Mount Royal, Montreal.
The giant elms at Malone, N. Y.
Cooper's cave at Glens Falls, N. Y.
The Battlefield of Saratoga.
Boy Scout Camp at Indian Lake, N. Y.

Two rainy days and less than a week of hot weather, June 24 to August 28. By automobile 6,270 miles with less than 50 miles of detour. Over 1,000 miles by rail.

New 172 Inch Book Machine For Champion

The Champion Coated Paper Company, Hamilton, Ohio, is now erecting its new Black-Clawson 172 inch book machine, making a total of ten Black-Clawson fourdrinier machines in this mill with a total of 1362 inches.

The Black & Clawson Company, the builder writes as follows regarding this new fourdrinier: "While the machine stood in our shop waiting for the building to house it to be completed, many visitors from all parts of the country were privileged to see it. Without exception, the comment on it from every one was that it is the most remarkable piece of workmanship they had ever seen."

The wire on the machine is 80 feet long and 172 inches wide, with a 20 inch breast roll and 30 inch suction roll. The table rolls are built in sections of 5 and 6 rolls with the rolls arranged in tandem so that if one roll turns all the rolls in the section will turn. This positively prevents flat rolls and is accomplished with anti-friction bearings. The Voith stock inlet, the Kutter forming board, the Wentz "No Deckle" device, and the Devine wire oscillator are prominent features which have been incorporated to make the Fourdrinier completely modern.

In order to change the wire quickly an entirely new principle is used whereby the table roll section, the suction box section, and the couch roll are removed as separate units. The design is so simple that the entire operation is performed by the use of hand ratchets. There are no angles to put into place, in fact, no heavy lifting of any kind.

The wire is strung automatically. As one superintendent said: "It should be possible to put on a wire with inexperienced help and with as much ease as putting on a felt."

There are three presses with 26 inch rubber covered bottom and 22 inch granite top rolls. Our standard press frame construction allows the press rolls to be removed without the use of a crane. The felt rolls for press and dryer sections are carried in self-aligning sleeve type bearings.

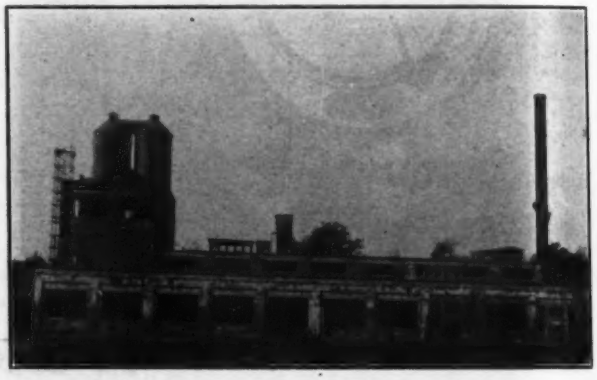
The forty-48 inch diameter dryers are equipped with the Sheahan paper carriers with the ropes returning through the basement. There are three pairs of smoothing rolls, one ahead of the dryers and two between sections. The two calender stacks have hydraulic lifts.

A uniform speed reel receives the sheet from the machine and it is rewound on a four drum winder. The drive is sectional electric built by Westinghouse Electric & Mfg. Co.

Canadian Cellulose Co. To Start in January

When the plant of the Canadian Cellulose Company in Cornwall, Ont., comes into operation about the first of the coming year another step will have been accomplished in the development of the pulp and paper industry in Canada. This plant is being constructed for the manufacture of soda pulp, a product which has not been recently produced in Canada. The Howard Smith interests are behind this undertaking which is a sufficient assurance of its success.

The plant will have an initial capacity of fifty tons per day. It is being designed, however, so that its output can be readily increased whenever conditions justify expansion. The design embodies the latest developments in engineering and nothing is being overlooked which may add to its efficiency. The equipment which is being installed includes the following units: Two 9 ft. 6 in. x 40 ft. welded digesters with Morterud heaters, Oliver equipment for washing and thickening the stock, a high consistency bleaching system and Kamyr press drying machine for finishing the pulp. In connection with the recovery system Wagner furnaces are to be used in conjunction with a multiple effect evaporator, continuous causticizing and lime recovery. The building which is now practically complete is well designed and incorporates the most modern ideas in plant construction.



NEW PLANT OF CANADIAN CELLULOSE CO.

It seems likely that this plant will not only establish new standards for efficiency but also that its construction will set a new record for speed. Work on the design was only begun in March of the present year. Ground was broken on May 5 and every hope is entertained that production will be started not later than January next.

Northwest Pulp Co. Raises $200,000

PORTLAND, Ore., October 22, 1926.—The Northwest Pulp and Paper Company is being assisted in raising $200,000 in stock subscriptions by a definite campaign launched by the Chamber of Commerce of Astoria, Ore. Business and professional men of that city are all taking an active part in the project. The company proposes to erect a pulp mill at Astoria on Young's River with a daily capacity of 100 tons of pulp.

Your Paper is Made in Your Beaters

When you buy Beating Engines why not buy the best?

The Dilts approved NEW TYPE Beater is an improvement over standard Hollander type beating engines. It is a faster circulating beater, handles heavier stock, and requires no more power. The tub is iron, designed to save time and power, and the bottom is the "self dumping" style, inclined and built of concrete. Emptying valve operated from outside the tub with a lever. Roll of bandless type, if desired, with four cast steel heads and with heat-treated alloy steel fly bars. Lighter bar supported in Dilts patented rigid stands, spring cushioned if desired, and carried in water-chambered, rocker type bearing boxes. All the Dilts improvements and with 50 years of Dilts experience back of them. That is the Dilts approved NEW TYPE Beater.

You should buy the best beating engine possible because "your paper is made in your beaters."

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~15 PARK ROW~ NEW YORK CITY

Historical Sketch of East Hartford Mfg. Co.

The site now occupied by the East Hartford Manufacturing Company, at Burnside, Conn., has been a manufacturing site since 1669. At that time John Bidwell and Joseph Bull received a grant from the General Court of two hundred acres of land, in consideration of their building a saw mill, on what was then known as Saw Mill River. The following fall the saw mill was built, directly above the grist mill, owned by John Crow.

FIG. 1

Between 1670 and 1690 the property above mentioned was purchased by William Pitkin. This property then consisted of three distinct mill sites, designated as the upper, middle, and lower mills. The upper was the fulling mill, the middle was a saw mill, and the lower a grist mill. Upon the death of Mr. Pitkin two of his sons came into possession of the middle mill, while the upper mill was willed to another son. The property remained in the hands of the Pitkin family, and partners with whom they were associated, until about 1806.

Mill Erected About 1750

Some time between 1750 and 1780 a paper mill was erected on the site of the old middle mill, the land and stream being leased to the paper mill owners. When the paper mill was first organized there were sixty-four stockholders. In 1805 the paper mill was sold to Barzillai Hudson and George Goodwin. The property continued in the hands of these two, or their heirs, until it was acquired by Henry and Walter Keney, who, in 1864 sold the property to Francis Hanmer and Chas. Forbes. These, together with D. A. Tuttle, formed East Hartford Mfg. Co., under a Connecticut Charter, dated August 17, 1865.

There are numerous old records about the mill showing the kinds of paper made, both in the old mill, at the time when nothing but hand paper was manufactured, and also a few records of the paper made prior to the formation of the present company. A record book of 1817 shows that the following grades of handmade paper were manufactured: Vellum writing, laid writing, Bible paper, ledger paper, letter paper, wrapping paper, button board, bank bill paper, cartridge paper, spelling book, rope wrapping paper, bank note paper, and post office paper. There are also records of printing paper having been made at this time.

Another old record book of 1855 gives a long series of records of money paper made at the mill. In the early years of the present company bonds, ledgers and writings were made. This policy was followed for some time and in 1878, A. W. Eaton, now president of Eaton, Crane & Pike, became associated with the company as secretary. Mr. Eaton built up a large business on fine papeterie papers, which were manufactured, folded and boxed at the mill. Later Mr. Eaton left the company to associate himself with the Eaton, Crane & Pike Company, manufacturers of fine stationery.

L. S. Forbes came into the company in 1883 as treasurer and was elected president in 1887. He remained president of the company until it was sold to Messrs. Clark and Hatch, August 17, 1926, when the following officers were elected: R. S. Hatch, President, F. C. Clark, Vice President and Treasurer, and Ten Eyck R. Beardsley, Secretary.

It will be the policy of the new owners to continue in the manufacture of papers bearing the water marks owned by the company, and which have enjoyed a very high reputation in the past. Every endeavor will be made to maintain the high standards originally set by the company, and to offer only those papers to the trade which will be the highest quality in the particular class in which they may fall.

One of the old buildings now being used as a warehouse will be of great interest to those who have followed the history of paper making in this country. This building (Fig. 1) is one of the old units of the handmade paper mill. The main part of the building is constructed of native stone, and part of the second floor is built of large sliding slats, so arranged that by sliding sections of the side, the room can be partially opened to the atmosphere. This part of the building was used as a loft and after hanging the paper the sides were opened and the paper dried much the same as tobacco is now dried in drying sheds, throughout the Connecticut valley. In addition to the interesting old records in possession of the company there are also several old hand molds that were used in the handmade paper mill. Figs. 2 and 3 are the other views of the plant.

FIG. 2

FIG. 3

This Winter Will Tell ~

Whether Or Not Your Ventilating System Is Both Efficient and Economical!

The cost of producing paper—especially the cost of power and steam—depends to a large extent, on the ventilation of the machine room. Failure of the system in this division of the mill may prove most costly in loss of production or in quality of production. And this loss must indirectly affect the final margin of profit.

It should be somebody's job to check up on the ventilating system and get the facts. This winter will tell.

Our Heating and Ventilating Engineers Can Help You To Make a Survey of Conditions

Ross engineers devote their entire time and effort to the proper heating and ventilating of Paper Mills. Their years of specialized experience and research work can be of material assistance toward securing the utmost efficiency in the heating and ventilating of your mill. Ask them to discuss your problems with you.

J. O. ROSS ENGINEERING CORPORATION

549 W. Washington Blvd. CHICAGO

Main Office - 30 E. 42nd Street NEW YORK

1117 Tacoma Ave. TACOMA, WASH.

ROSS ENGINEERING OF CANADA, LIMITED

New Birks Bldg.—Montreal

ROSS SYSTEMS

HEATING—VENTILATING—DRYING

Western Paper Converting Co. Starts Fine Plant

Just a year ago work began on the building to house a new concern in Salem, Ore., the Western Paper Converting Company. Today the plant is operating twenty-four hours a day in its printing department, and nearly full time in other departments converting bonds, glassine, greaseproof, and other high grade paper, made by the Oregon Pulp and Paper Company, into various finished paper specialties.

The principle products of the converting plant are printed greaseproof meat and food wrappers of all kinds; printed and die cut glassine wrappers; bon bon cups, baking cups, etc., glassine bags; embossed and colored glassine paper; adding machine paper and cash register rolls; plated bonds, and various other items.

This plant is the only one of its kind in the western part of the United States. It is serving the trade of its section of the country, and is also shipping to the Hawaiian Islands, Philippine Islands, and to the Atlantic sea-board.

The plant is housed in a concrete building, 100 feet by 200 feet, which was particularly laid out and constructed so that the raw stock travels from one department into the other with the least amount of handling. The company owns three acres of land situated on the Wilamette River, a navigable stream, and has a contemplated building plan of five units similar to the one finished. The present printing equipment has already proved inadequate to handle the volume of business obtained, and a large multi-color, high speed rotary press is being built to order and will be installed shortly after the first of the year. Volume for other departments is rapidly being developed into full time production, and it is predicted that the present plant will be enlarged before many months.

Officers of the Western Paper Converting Company are, F. W. Leadbetter, president; E. A. O'Niell, vice president; F. W. Chausse, treasurer; Joseph Prudhomme, secretary, and Lloyd Riches, manager.

New Wood Storage System at Cornell

In making its decision on the kind and type of equipment needed, and which would replace its present more or less obsolete stacker, the Cornell Wood Products Company, Cornell, Wis considered that there were six essential requirements which would have to be met in making an installation of this kind, viz:

1st—A reasonable initial cost of installation.

2nd.—Economical operation cost.

3rd.—Quick piling or stocking.

4th.—Quick recovery from stock pile.

5th.—Proper segregation of pulpwood by grades, giving us complete control of the furnish going into our finished product.

6th.—Reasonably prompt turnover and rotation of pulpwood stock, thereby reducing the probability of any overruns or shortages.

The principle of the apparatus is an outgoing horizontal chain conveyor on a light structural steel trestle 50 feet above the ground level for carrying the pulpwood to the proper stock pile, and the return at ground level of this chain conveyor for use in returning the pulpwood to the proper point for dropping into the water sluices for transporting to the barker drums.

The trestle is in two sections with a total of 23 bents set in concrete footings. One section 240 feet long connects with the shasher house by an incline plane conveyor. The other section 220 feet long connects at right angles with the first section at the extreme end away from the slasher house. The bents are set on 20 foot centers.

Storage facilities for stocking 5,000 cords of pulpwood of four different grades are provided by this system.

The capacity will be 25 cords of pulpwood, in two feet lengths, per hour for stocking.

Two ten horse power A. C. motors will be used to drive the conveyor chains.

To protect the return ground level conveyor chain from the pulpwood which would tend to slip toward the center of the trestle we will use heavy removable planks braced from the ground to horizontal angles on the trestle.

The company is arranging the installation so that it may at any time cut in with barking operations which will permit it to stock its pulpwood with the bark off.

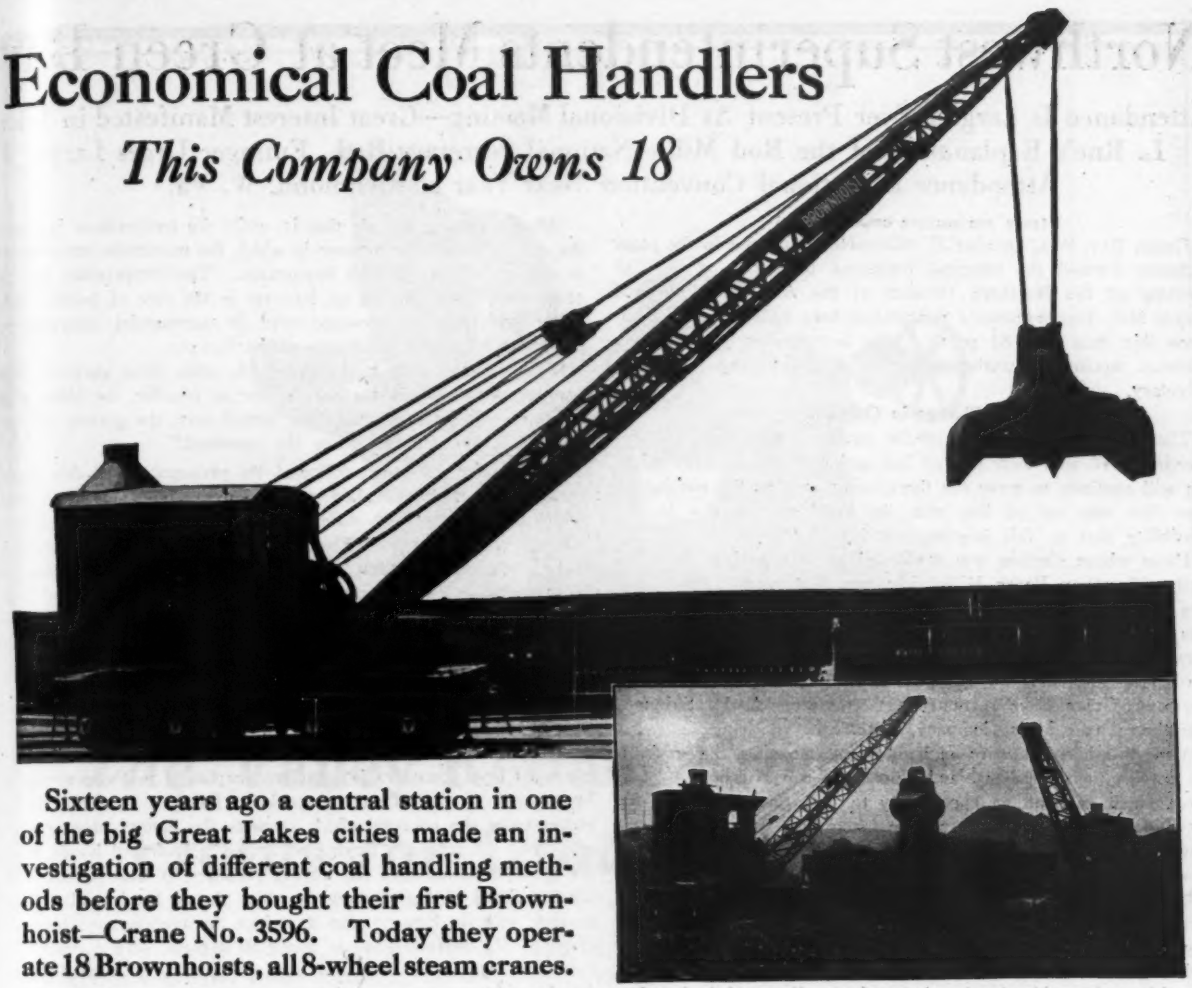
Bill Ashe To Coach Lawrence Freshmen

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 25, 1926.—William F. "Bill" Ashe, employment manager of the Thilmany Pulp and Paper Company, Kaukauna, Wis., has been chosen freshman football coach at Lawrence College, Appleton, Wis., this fall. He will undertake this work in addition to his paper mill duties. Mr. Ashe made such a good record in developing an American Legion football team the last few seasons that the college arranged to obtain his services. He was a star athlete of Union College of Holyoke, Ohio, from which he graduated.

Economical Coal Handlers

This Company Owns 18



Crane No. 3596 is shown working at the storage pile. Above is the modern Brownhoist 20-ton crane with 54-cu. ft. Link-type Coal Bucket.

Sixteen years ago a central station in one of the big Great Lakes cities made an investigation of different coal handling methods before they bought their first Brownhoist—Crane No. 3596. Today they operate 18 Brownhoists, all 8-wheel steam cranes.

These cranes have handled millions of tons of coal, besides excavating for new plants, driving and pulling piles, handling heavy loads by hook block and a great amount of switching.

Ever since 1910 this user has proved the rugged strength, long life and economy of Brownhoists. They know cranes because they have a much better opportunity to study and test them than most companies.

And they rely on their Brownhoists because they have made good.

Why don't you, too, make an investigation of your handling costs, remembering that this big user has put his stamp of approval on Brownhoists and that there is a Brownhoist to suit every need? We shall be glad to cooperate with you.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans.

BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

Northwest Superintendents Meet at Green Bay

Attendance Is Largest Ever Present At Divisional Meeting—Great Interest Manifested in John L. Rue's Explanation of the Rod Mill—National Secretary R. L. Eminger Urges Large Attendance at National Convention Next Year at Richmond, W. Va.

[FROM OUR REGULAR CORRESPONDENT]

GREEN BAY, Wis., October 25, 1926.—New processes in the paper industry formed the principal topics of discussion at the fall meeting of the Northern Division of the American Pulp and Paper Mill Superintendents Association here today. The attendance this time was 83 persons, the largest ever present at a division meeting as authenticated by R. L. Eminger, national secretary.

No Change in Officials

There is no change in the official personnel as a result of this meeting. All who were elected last spring at the Wausau meeting will continue to serve for the coming year, as the election at that time was out of line with the usual custom, due to the possibility that no fall meeting would be held.

Those whose election was confirmed are: President, Roy H. Kelly, Marathon Paper Mills Company, Rothschild, Wis.; first vice president, Vance P. Edwardes, United States Forest Products Laboratory, Madison, Wis.; second vice president, E. P. Gleason, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; third vice president, D. B. Davies Hoberg Paper and Fibre Company, Green Bay; secretary and treasurer, A. H. Skinner, Marathon Paper Mills Company, Rothschild.

While the delegates were on hand in the morning, the sessions did not begin at the Northland hotel until the afternoon. This arrangement gave all an opportunity to visit the paper mills at Green Bay, Wis. The visitors were taken on a tour of the Fort Howard Paper Company, Northern Paper Mills, and the Hoberg Paper and Fibre Company plants. They spent considerable time looking into methods used in each plant and had many questions answered for them. Their visit was considered so profitable that they officially expressed their thanks during the sessions. The drying system used at the Hoberg plant, installed recently, was the subject of considerable interest, and was discussed during the meetings.

Attention of the superintendents at the afternoon session in the Crystal Ball room of the hotel was directed principally to the accomplishments of the Forest Products Laboratory at Madison, Wis. President Kelly acted as chairman. W. H. Swanson, associate chemist of the laboratory, was expected to present a paper but was detained at the last minute. His address was read, however, by John D. Rue, of the laboratory staff, who was on the program later for an address of his own.

Temperature in Sulphite Process

Temperatures are all important it was pointed out in Mr. Swansons treatise on "The Role of Temperature in the Sulphite Pulping Process." High yield of either bleached or unbleached sulphite pulp depends greatly on this factor. There is such a thing as critical temperatures, and these were defined for spruce as 110 degrees centigrade, and 120 for hemlock. Any temperature below this point are a preliminary heating period, and those above are the pulping period.

These statements from Mr. Swanson's paper perhaps emphasize the salient points of his declarations:

"During the preliminary heating period, the cooking acid must penetrate the wood and establish intimate contact for the production of pulp of a uniform quality with minimum screenings. The period should be as short as consistent with uniform penetration. The experience in spruce has been as short as one hour if the chips average 5/8 inches in length. In hemlock the process is slower but it should not be less than two hours and preferably two and a half to three hours.

"In the pulping period, that is, while the temperature is above the critical value, the manner in which the maximum temperature is obtained is of greatest importance. The temperature rise is accompanied not only by an increase in the rate of pulping but, under limitation of pressure used in commercial installations, by a loss of sulphuric acid from the digester.

"In producing pulp from spruce for news print purposes, the practice is to cook in as short a time as possible, the idea being the more often the digesters are turned over, the greater will be the production and the lower the overhead."

Considerable discussion followed the presentation of this paper by Mr. Rue. He was called upon to answer questions as to how this process applies with different kinds of wood, and if age and other factors made any difference. Use of new materials seemed to be a matter of concern, and Mr. Rue declared that progress is being made in experiments along this line. He mentioned flax and cornstalks as materials which will have a greater usage in the industry soon due to the pulpwood supply becoming more distant, but he said neither these nor other products could take the place of wood.

Drying and Ventilating Costs

Checking of heat losses and reduction of drying and ventilating costs by a considerable sum were explained to the convention by another of the afternoon speakers, Rutcher H. Skagerberg, representing the concern which markets the Sirocco drying system. His subject was "Drying of Paper." V-shaped hoods have the greatest advantages for drying purposes, it was shown, and are far ahead of drying methods which use no hood at all. It is possible with the Sirocco plan to reduce the average roof temperature of 175 degrees down to about 90 degrees. No complicated roof duct system is necessary and the roof is prevented from deteriorating.

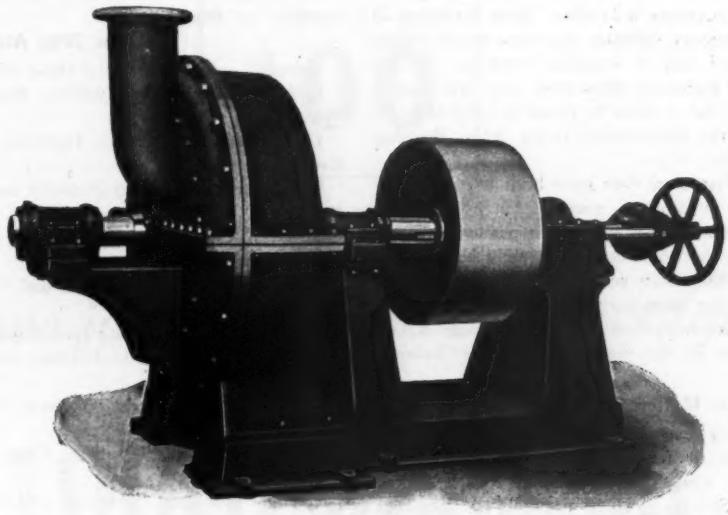
Briefly the equipment he advocated consists of a large hood suspended over the drier section of the paper machine and also shielding the gear side. In addition it takes care of the blowers, indirect heaters and the exhaust ducts connected to the exhaust fans. With this arrangement, there is a stoppage of heat losses and increased production results. It was shown that the cost of drying and ventilating can be reduced from four dollars to approximately one and a half dollars a ton.

Graphs were used by Mr. Skagerberg to illustrate various phases of his talk. On one of these he showed the variations in temperature. At a pressure of ten pounds, he said, the temperature would hover at 240 degrees; at 20 pounds it is 260 degrees; at 30 pounds, 275 degrees, and at 50 pounds, 298 degrees. Extent of the vapor accumulation under the felts and between the driers also was exhibited.

Mr. Rue Explains Rod Mill

Superintendents were just like pupils back at school when Mr. Rue appeared for the second time to give the talk for which he was scheduled on "Rod Mills." There was added interest in what he said because he brought a big supply of exhibits of paper in process under the rod mill idea. Chips made in this new type of drum, and everything up to the finished kraft and board paper was shown and the men fingered the products eagerly. His emphasis was largely on the necessity for slow action in rod mills.

After operating a rod mill for weeks at the Forest Products Laboratory, certain definite conclusions have been reached, said Mr. Rue. One of these is that there is a great saving in oper-



The Valley Refiner Produces Extra Profits *for Ground Wood* Mills

The Valley Refiner, successfully operating in some of the most progressive ground wood plants in the country, is saving for its owners 2 to 6 tons of ground wood pulp per day. The figures given below show the approximate saving which this successful piece of equipment can accomplish.

When the Valley Refiner reclaims two tons of pulp per day, or 600 tons per year, on a conservative estimated value of $25.00 a ton, the machine produces an annual income of $15,000. The single type Valley Refiner requires 75 horse power to operate it, costing about $4,500 annually.

Manufacturers, reclaiming two tons of pulp per day, thus save from the scrap heap $10,500 per year. You cannot permit an opportunity to make such a saving slip by without at least fully investigating it.

Refiner Booklet

Write at once for full information regarding the Valley Refiner and for proof of its remarkable waste saving possibilities. A new informative booklet describing the Valley Refiner and present day refining methods is just off the press. Write for your copy today.

VALLEY IRON WORKS CO.

APPLETON, WISCONSIN

New York Office: 350 Madison Avenue

ation and maintenance if a rod mill is used. The mill has considerable value for refining and beating.

Rod mills consist of revolving cylinders, explained the speaker, around which there are a number of steel rods about two to three inches in diameter. These operate freely, rubbing and gently pounding the wood to reduce it to fiber. Slow revolving of the drum therefore is necessary, because the rods would collect in one place otherwise and fail to function properly. Results obtained with chestnut and gumwood chips were very satisfactory, according to his statement, but it must be borne in mind that the toughness of material is the determining factor when choosing the size and weight of rods.

Both ordinary and stainless steel rods have been tried in these machines, Mr. Rue said in answer to a question, but no injury to fiber has been noted with the former kind. No positive decision has been reached as to whether stainless steel should be the rule. Paper Mills in Wisconsin have been very good about cooperating to try out the rod mills, the laboratory expert said. However, the new machines have been very limited in usage, only a few having been made to date in the plant of the Allis-Chalmers Company, Milwaukee.

Association Matters Discussed

With the technical papers disposed of, the convention turned its attention to association matters, as the concluding activity of the afternoon program. One of these was the report of the division secretary, A. H. Skinner. There are now 88 members in good standing, he said, with a net gain of 5 for the year. Sixteen dropped out early in the year and twenty-one have been added. Wisconsin, Minnesota and Upper Michigan have furnished the new recruits, he said.

Fred J. Rooney, president of the national association, sent his greetings to the convention by letter, as he was unable to be present. One representative of the national body was present, however, in the person of R. L. Eminger, of Miamisburg, Ohio, national secretary. He presented the letter sent by Mr. Rooney.

In a brief address Mr. Eminger expressed the hope that there would be a large attendance at the convention of the national association in May or June of next year at Richmond, W. Va. One of the attractions, he said, is the group of about twenty paper mills in Richmond or the near vicinity, and a tour of these would be of considerable interest. The trend toward paper making in the south is rapid and it is of interest to the northern superintendents to get into that locality to learn what is being done, said Mr. Eminger. There are now many mills in the region where the gumwood forests are.

There is need, said the national secretary, for a definite classification of members and suggested that all mill superintendents be listed to indicate whether they are in sulphate, sulphite, soda, or ground wood pulp mills. It is impossible now for officers of the association to take care of inquiries properly. If a superintendent does not happen to state in his letter what type of mill he is employed in, nothing can be done to refer his communication to the right persons until this information is obtained. Preparation of an accurate list is the remedy, he said.

Efforts to Increase Membership

Efforts also ought to be made, Mr. Eminger said, to increase the membership. Cooperation with John A. Bowers of the Hammermill Paper Company was urged. This official recently was appointed chairman of a committee on chemical and mechanical pulp mill superintendents. Mr. Bowers has found that there are 442 such mills in the United States and Canada, with only a small percentage of the superintendents enrolled in the association.

Business was laid aside at the closing session of the convention, a banquet served at 6:30. Entertainment was provided and the members were given an interesting address by James H. McGillan of Green Bay, former judge. He is now a lieutenant-commander of the U. S. Naval Reserve Forces and in charge of the youngsters in the reserve fleet at Green Bay. His subject was "The United States Navy," and he gave many interesting sidelights on the life of a sailor and the objects of this organization.

Whether the next meeting will be a one day session was a topic of discussion several times. The superintendents felt that they would like to spend at least one day visiting mills in the convention city, and that the time for talks and discussion was altogether too short.

Those Who Attended

Below is a complete list of those who attended the meeting.

F. C. Boyce and Roy Selliers, Wausau Paper Mills, Wausau, Wis.

J. H. Slater and William Haddock, Escanaba Paper Company, Escanaba, Mich.

R. A. North, Green Bay Foundry and Machine Company, Green Bay, Wis.

R. H. Kelly and A. H. Skinner, Marathon Paper Mills Co., Rothschild, Wis.

D. B. Davies, Hoberg Paper and Fibre Company, Green Bay, Wis.

W. A. Kelly, Northern Paper Mills, Green Bay, Wis.

A. Umberham and P. D. Bradley, Fort Howard Paper Company, Green Bay, Wis.

Charles Dupries, Great Western Paper Company, Ladysmith, Wis.

J. G. Shaken, Footer Brothers, Gear and Machine Company, Chicago, Ill.

Ralph L. Eminger, Secretary American Pulp and Paper Association, Miamisburg, Ohio.

W. G. Guidotte, Levins-Guidotte, Neenah, Wis.

E. O'Brien, Dells Pulp and Paper Company, Eau Claire, Wis.

E. P. Gleason, Nekoosa-Edwards Paper Company, Port Edwards, Wis.

J. D. Rue, Forest Products Laboratory, Madison, Wis.

Jan Haugeroi, Peshtigo Pulp and Paper Company, Peshtigo, Wis.

Allen Abrams, Marathon Paper Mills Company, Rothschild, Wis.

A. G. Stone, Marinette and Menominee Paper Company, Marinette, Wis.

Oscar Staniska, Hoberg Paper and Fibre Company, Green Bay, Wis.

C. F. North, Green Bay Foundry and Machine Company, Green Bay, Wis.

J. C. Burton, Simond Saw and Steel Company, Ill.

W. F. Swan, Limestone Products Company, Menominee, Mich.

L. H. Breyfogle, Draper Brothers, Canton, Mass.

George Bonner, Falls Manufacturing Company, Oconto Falls, Wis.

L. C. Locklin, Shulern-Benninghofen, Hamilton, Ohio.

E. C. Jacobi, Standard Oil Company, Green Bay, Wis.

C. D. Durkee, D. J. Murray Manufacturing Company, Wausau, Wis.

John Hercher, John Strange Paper Company, Menasha, Wis.

W. H. Burns, Valley Iron Works, Appleton, Wis.

Edw. McCormick and E. G. Fox, Central Wire Cloth Company, Green Bay, Wis.

M. Cavanaugh, Manhattan Rubber Company, Chicago.

George V. Parmentier, Tomahawk Kraft Paper Company, Tomahawk, Wis.

R. D. Terrien, American Writing Paper Company, DePere, Wis.

A. McPhilips, R. J. Dowd Knife Works, Beloit, Wis.

C. E. Stahl, Tomahawk Kraft Paper Company, Tomahawk, Wis.

J. F. Kern, Federal Metals Corporation, Chicago.

F. E. Saecher, Appleton Machine Company, Appleton, Wis.

A. L. LeRoux, Riverside Fibre and Paper Company, Appleton, Wis.

T. E. Kellberg, Dry Systems, Inc., Chicago.

A. H. Haskins and Commodore Thomas, Hoberg Fibre and Paper Company, Green Bay, Wis.

A. S. Viger, Munising Paper Company, Munising, Mich.

C. W. Cole, Northern Paper Mills, Green Bay, Wis.

Ed. Shield, Hoberg Paper and Fibre Company, Green Bay, Wis.

C. M. Cram, Security Rubber and Belting Company, Chicago.

100

We have just received a contract for the

100th Jenssen Tower Acid System

This installation is for the St. Anne Paper Co., Ltd., Beaupre, P. Q., Canada

We appreciate the confidence the pulp manufacturers have always placed in us and it is our aim to continue serving the industry, in a manner that will justify this confidence in the future as it has in the past

G. D. Jenssen Co.

200 Fifth Ave., New York, N. Y.

R. H. Cunningham and Gus Klaus, Northern Paper Mills, Green Bay, Wis.

Mike Heigl and F. J. Timmermanl Northern Paper Mills, Green Bay, Wis.

G. J. Chapleau, D. H. Green and J. P. Zelinski, Wisconsin Tissue Mills, Menasha, Wis.

John J. Nyland, General Dyestuffs Corporation, Chicago.

James Foxgrover, Western Paper Manufacturing Chemical Company, Kalamazoo, Mich.

C. M. Holt, Pennsylvania Salt Manufacturing Company, Philadelphia, Pa.

George Thomske and H. Daven, Nekoosa-Edwards Paper Company, Nekoosa, Wis.

R. Skegerberg, Drying Systems, Inc., Chicago.

R. J. Siebert, Marinette & Menominee Paper Company, Marinette, Wis.

A. J. Winnige and H. J. Swanson, Great Western Paper Company, Ladysmith, Wis.

Frank Cota and Anton Gustin, Falls Manufacturing Company, Oconto Falls, Wis.

R. J. Kummer, Tomahawk Pulp and Paper Company, Tomahawk, Wis.

J. M. Ratsch, Thilmany Pulp and Paper Company, Kaukauna, Wis.

R. J. Lammoreux and J. B. Ziemann, Marinette and Menominee Paper Company, Marinette, Wis.

H. B. Clurman, Green Bay Barker Company, Green Bay, Wis.

John Sobota, Fort Howard Paper Company, Green Bay, Wis.

Harry Jacquin, A. E. Cofrin and Gus Gilsaul, Fort Howard Paper Company, Green Bay, Wis.

H. A. Morrison, Oliver Filter Company, New York.

M. J. Ketter, V. Larschot and H. D. Banta, Hoberg Paper and Fibre Company, Green Bay, Wis.

A. W. Burton, Northern Paper Mills, Green Bay, Wis.

P. A. Smith, Combined Locks Paper Company, Combined Locks.

Canadian Scottish Paper Co. Starts

The Canadian Scottish Paper Company, Ltd., successfully opened the first unit of its mill at New Westminster, B. C., on September 22.

The function was presided over by William Gorman, president and general manager, who in well chosen words paid tribute to those who had assisted in bringing into being the company and its plant.

After congratulatory speeches by Mayor Annandale of New Westminster, and Dr. Rothwell, the local member of the Provincial Legislature, the electric switch was thrown in, and the mill started running in perfect order.

A run of India tint coated book was put over the coating machine, producing an excellent run of paper.

A large number of prominent citizens of New Westminster, and the neighboring city of Vancouver were present to listen to the speeches, to witness the machinery operating and to partake of the refreshments provided by the directors.

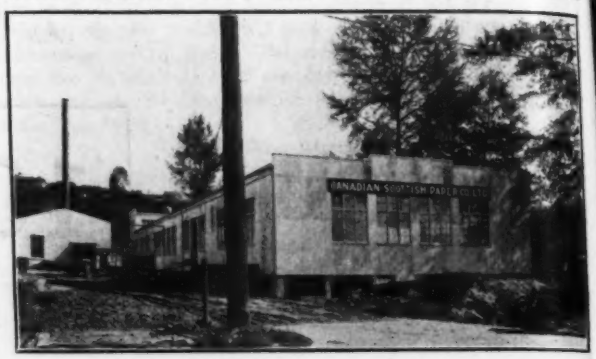
The plant is at present equipped with: 1 high grade coating machine, 1 super calender, 1 revolving beam cutter, 1 pasting machine for board manufacture, 1 plater, 1 Flint machine for glazing, 1 large guillotine with other up-to-date finishing equipment.

There is a splendid color room which will take care of all art paper coloring, also boiler house, machine shop, etc.

Further units will be added as the development of the industry demands.

The president and general manager of the company, Mr. Gorman, has had a long and varied experience in the paper industry, commencing in Scotland, then in England and for the past twenty years has been associated with one of the largest mills in Eastern Canada.

The mill superintendent and other skilled employees have spent a number of years in the trade and are all highly efficient.



PLANT OF CANADIAN SCOTTISH PAPER CO.

The mill is now operating nicely and expects to turn over a good deal of business in all classes of art papers, boards, etc.

Rhinelander Paper Co. Increases Power

The Rhinelander Paper Company, Rhinelander, Wis., has this year comp'eted two important units that will add greatly to its source of power to adequately carry on the work necessary in preparing the raw paper stock through the various steps on to the four paper machines to the finished product.

In the foreground of the accompanying cut is shown a new 1000 K. W. hydro installed to convert power direct to motors driving beaters that heretofore were driven by inefficient drives off water wheel shaftings that this new generator displaces.

Back in 1904 when paper was first manufactured at Rhinelander, one D. C. generator supplied the only electric current for driving the few motor installations with which the mill was equipped, the balance of the power being derived from direct connected water wheels and steam engines. With this new water wheel generator installation the mill is capable of developing about 3000 K. V. A.

To take care of periods of low water which occur each year, it was necessary to furnish an auxiliary steam power unit. A 2000 K. W. General Electric steam turbine has been erected to take the place of various steam engines and a small turbine.

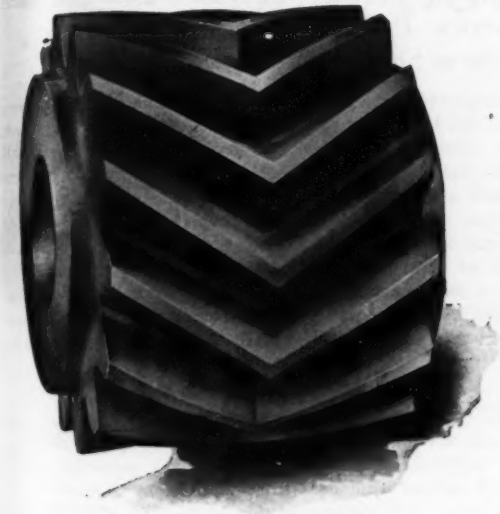
Not only in the power end has the Rhinelander Paper Company made great strides during the past year. A large number of new and more efficient machines have been installed in the glassine and greaseproof departments of the mill. All these changes have resulted in a very material improvement both as to quality and production, and the Company is rapidly gaining a splendid reputation for its glassine and grease-proof products.

William Eibel, who had charge of the mill from 1904 to 1919, is again at the helm, with the able assistance of Folke Becker, superintendent, formerly in charge of the Westfield River Paper Company, Russell, Mass. John A. Wesley is sales manager.

NEW TURBINE AT RHINELANDER PLANT

AN IMPROVEMENT—NOT MERELY AN ALTERNATIVE

PRESERVE THIS PAGE FOR YOUR ENGINEERING DEPT.



FARREL-SYKES HERRINGBONE GEARS WITH CONTINUOUS TEETH

SIZE D6

Our designs of enclosed units for reducing speed are a great improvement on other types. The units are all self-lubricating, oil-tight, dust-proof, and thoroughly reliable. More important still, they contain Sykes continuous herringbone gears (as illustrated above) which transmit loads smoothly and silently. The efficiency of these gears has been shown by recent tests to be between 98.9 and 99.4%. This page deals particularly with our D-6 unit which is very suitable for agitator and conveyor drives. In addition, we have about sixty different sizes which cover every kind of power drive which may be required.

Preserve this page in your files. It will be useful to your Maintenance Department.

HORSE POWER CAPACITIES

The table below gives horse power capacities with a liberal factor of safety for uniform loads and continuous service. We have extensive experience in the design and application of these units and it will pay you to consult us on your power transmission problems.

	RATIO						
	10/1	15/1	20/1	25/1	30/1	35/1	40/1
R.P.M.	HORSE POWER						
300	9	6	4.5	3.6	3		
500	15	10	7.5	6	5	4.3	3.75
600	18	12	9	7.2	6	5.1	4.5
720	21.6	14.4	10.8	8.6	7.2	6.2	5.4
900	27	18	13.5	10.8	9	7.7	6.75
1200	36	24	18	14.4	12	10.2	9
1800		36	27	21.6	18	15.4	13.5

Any desired ratio between 10/1 and 40/1 can be supplied. For intermediate ratios and speeds not shown the horse power rating may be obtained from the formula:—HP = .3 x R. P. M. of slow speed shaft.

FARREL FOUNDRY & MACHINE CO., Buffalo, N.Y.

AND ANSONIA, CONN.

New York, N. Y. 79 Wall St.
Boston, Mass. 914 Little Bldg.
Cleveland, Ohio 802 Swetland Bldg.
Pittsburgh, Pa. 649 Union Trust Bldg.
Havana, Cuba Edifico, Canada
San Juan, Porto Rico

Los Angeles Paper Demand Shows Expansion

Good Business In Progress and This Is Expected To Show Constant Increase—Los Angeles General Paper Merchants Offer Printers Helpful Service Probably Not Matched Elsewhere in the Country—Fruit Wrapper Business Shows Big Growth

LOS ANGELES, Cal., October 22, 1926.—Trade conditions in the paper industry continue to improve as the winter approaches. Jobbers say they are doing a good business now and expect to do a much better one later in the year. General business appears to be picking up and this has an effect on the paper trades by stimulating the printers, most of whom are busy getting ready for the fall and winter advertising campaigns which annually are launched about this time of the year. In fact, every print shop in Southern California is busy and this naturally affects the demand for fine papers with the local jobbers.

Service by the Paper Jobber

As a matter of fact the printers in Southern California get a better grade and degree of service from the paper jobbers than are probably given to them anywhere else in the country. In a despatch from here some time ago your correspondent mentioned the display room for the benefit of printers and advertisers maintained by Blake, Moffit & Towne. Similar services are rendered by the paper jobbing houses here. The result is that the printers have come to rely upon the jobbers for a lot of assistance in planning their work. The jobbers are willing to and do make up dummies, weigh them and show both the printer and the prospective advertiser just what he can use in the way of fine papers and what it will cost him for the expense outside of the actual stock and printing. Thus, when a business institution purposes to put out a catalog or other extensive advertising campaign, he can know in advance from the facts and figures given to him by the paper jobbers just what he can do and what it is going to cost him.

Growing Demand for Fruit Wraps

Your correspondent does not know whether the custom of wrapping fruits like oranges, apples and the like, in individual wrappers originated in California or not, but whether it did or no it has been developed out here to a wonderful extent. Millions of individual fruits grown in California find their way onto the eastern market stalls in individual wrappers, each attractively printed with colored labels. There are in Los Angeles, just as there are in several other California cities, large printing establishments which do nothing else but print the labels on these wrappers. Likewise, there are paper mills out here on the coast which produce the paper and which hardly produce anything else. In other words, they specialize on fruit wrapping and whatever else they may make in the line of paper is purely incidental to their main purpose.

Such an institution is the California-Oregon Paper Mills, located on 56th street just off Alameda, Los Angeles. This concern has been operating at its present site for some ten years and makes an enormous quantity of paper, most of which is used for fruit wrappers. Swedish pulp, which is imported in enormous quantities by the concern, is used as the basis for the paper manufactured. The foreman of the plant, in talking to your representative a few days ago, said that it would appear that the concern alone would make all of the fruit wrappers that are needed for the whole world, but that actually, it did not supply nearly all that are required. At the same time the total tonnage of such stock turned out by this concern runs into unbelievable figures. Lewis H. White, is vice president and treasurer of the concern and is the active head of the Los Angeles mill.

Incidental to the producing of fruit wrappers this concern makes also thousands of tons of paper used by the grape growers of California upon which their grapes are dried into raisins. During the time of the grape harvest these sheets of paper are spread right on the ground and upon them are piled the bunches of grapes. One might think that the dampness from the ground, or such infrequent wetting these sheets get from the rains which fall occasionally during the raisin season, would so weaken the paper as to make it a precarious reliance for the raisin producers. But the experience of the paper company, coupled with a close study of California climatic conditions, has resulted in the production of a grade of paper which will withstand the destructive effect of both heat and moisture so that practically it is indestructible. In any event, the far western vineyardists find it the most acceptable product they can use and annually they use great quantities of it.

Paper Sacks for Cement

And from this fact has grown a development out here in California which will mean a great accession to the paper industry and which will bring what is practically a new industry to the far West. Reference is intended to the production of paper sacks for cement mills. It is understood that in the East about 25 percent of the cement being manufactured is being shipped in paper sacks. But out here on the coast this use for paper is just in its inception. Just a few thousand paper bags have been used by the cement mills to date, but they are rapidly becoming converted to the belief that paper will prove a solution for their bag griefs.

It happens that it is a custom in the cement trade for the mills to offer a rebate of 10 cents per bag for all which are returned to the mills in good condition. This entails a vast expense and a lot of grief for the reason that controversies constantly are arising over claimed and disallowed credits for bags. Inasmuch as the cement industry has need for upwards of 750,000,000 bags a year this cause for trouble can be appreciated in its true magnitude.

Out here in Southern California the cement industry consumes about 40,000,000 bags a year. In the past these have been cotton but eventually will be displaced by paper, because the movement towards this end already is well under way and will continue until every pound of cement made out here will be shipped in paper containers.

Until very recently one trouble stood in the way of the adoption of paper for the Pacific Coast mills. How true the statement may be, your correspondent has no means of knowing, but it is said that paper used for cement bags in the East has been proven to be unsuitable for cement bags in California because it would not stand the California climate.

Bates Valve Bag Business Expanding

One concern, and one only, now is making cement bags on the Pacific Coast. This is the Bates Valve Bag Company, 1845 Humboldt street, Los Angeles. This concern decided to institute a branch in Los Angeles and has been in active operations only since the 6th of last February. But the paper at first shipped out here from the East did not prove to have stability enough and it was not until W. S. Weaver, district manager for the concern, saw what the raisin men of the San Joaquin Valley were doing with the paper made by the California-Oregon Paper Mills that he concluded that he could use the same or a similar grade of paper for the production of cement bags. So a contract was made with the paper mill and bags have been coming out of the Bates Valve plant in an ever increasing flood ever since. How its business has increased will be indicated by the statement that whereas only a few thousand bags were produced in February, 1926, the October production will be in excess of three quarters of a million.

Don't Let a Burst Tube or a Steam Pipe Shut Down Your Plant

Double Extra Heavy Valves

Elbow Angle Globe Patterns

You can safeguard your Central Station against the consequences of either accident by equipping all boiler outlets with

Golden-Anderson

Patent Automatic Double-Cushioned

Triple-Acting and also Non-Return Valves

1. Automatically cut out the boiler the instant that a tube ruptures or other internal break occurs.
2. Automatically cut off the steam flow from every boiler the instant that a steam pipe breaks.
3. Automatically equalize the pressure between all boilers.
4. Automatically cut in a boiler, making accidents due to inaccurate steam gauge impossible.
5. Positively prevent back flow of steam into a cold boiler.
6. Can be closed by hand, like ordinary stop valve, and arranged with combination feature to open valve like regular gate and globe valve.
7. The only valves that can be tested in service from boiler room floor.
8. Double Corliss Dash Pot that cushions in opening and closing.
9. Cannot pound, spin, stick, or chatter.
10. By disconnecting pilot valve; the triple acting style can be changed into plain non-return.

"Every Valve with an Absolute Guarantee." "Heaviest Valves Made"

The Big Steel Companies Take no chance on safety—

"4500"

Golden Anderson

Pat. Automatic Double-Cushioned Triple-Acting; and also Non-Return Valves

PROTECT THEIR PLANTS

The Big Paper Companies Who take no chance on safety—

International Paper Co.
West Va. Pulp & Paper Co.
Minn. & Ontario Paper Co.
Champion Coated Paper Co.
Finch Pruyn & Co.
Eastern Mfg. Co.
Crystal Tissue Co.
Halltown Paper Board Co.
Beckett Paper Co.

GOLDEN-ANDERSON

Pat. Automatic Cushioned Controlling Float Valve

1. Automatically maintains uniform level in heaters, tanks, etc.
2. Air and water cushioned.
3. No metal-to-metal seats.
4. No waste of water.
5. No water hammer or shock.
6. Angle or Globe patterns to 30 in.

GOLDEN-ANDERSON

Pat. Cushioned Automatic Controlling Altitude Valves

1. Automatically Maintain Uniform Water Levels in Tanks, Standpipes, Reservoirs, etc.
2. For High or Low Pressure. Always Dependable.
3. No Floats or Fixtures used.
4. No Water Hammer or Shocks.
5. Sizes up to 30 in.

GOLDEN-ANDERSON

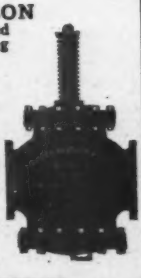
Pat. Automatic Double Cushioned Check Valves

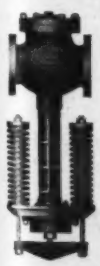
1. Especially adapted for Water Service.
2. For High or Low Pressure.
3. Thoroughly Cushioned. No chattering, Hammering, or Sticking.
4. Globe or Angle Patterns up to 30 in.
5. Especially adapted for hydraulic elevator service.

GOLDEN-ANDERSON

Pat. Automatic Cushioned Water Pressure Regulating Valves

1. Maintain a constant reduced pressure regardless of fluctuations on high pressure side.
2. Perfectly Cushioned by water and air. No metal-to-metal seats.
3. The best valve made for maintaining a constant low pressure where consumption is continuous.
4. Operates quickly or slowly as required—No attention necessary.
5. Positively no hammering or sticking. Sizes to 24 in.





GOLDEN-ANDERSON

Pat. Automatic Cushioned Steam Pressure Reducing Valves

1. Maintain a constant reduced pressure.
2. Thoroughly cushioned.
3. No hammering, chattering or sticking.
4. No auxiliary valves or small by-passes to clog up.
5. No wire drawing.
6. Only one adjustment from the outside.
7. Double extra heavy throughout—practically indestructible.

GOLDEN-ANDERSON

Pat. Automatic Cushioned Water Float Valves

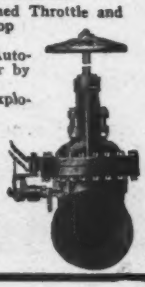
1. Automatically Maintain Uniform Water Levels in Tanks, Standpipes, etc.

2. Instantly Adjusted to Operate Quickly or Slowly.
3. Floats Swivel to Any Angle—Most Satisfactory Float Valves Known.
4. No Metal-to-Metal Seats—No Water Hammer or Shock.
5. Cushioned by Water and Air.

GOLDEN-ANDERSON

Pat. Cushioned Combined Throttle and Automatic Engine Stop Valves

1. Operate 3 ways: Automatically, by Hand, or by Electric Switch.
2. Prevent Fly-wheel Explosions.
3. "Double Corliss" Cushioned—No Pounding or Sticking.
4. Contains No Tight Fitting Parts.
5. Furnished in Angle and Globe Patterns for high or low pressures.
6. "Always Ready for Service."



"Hosts of References"

Golden-Anderson Valve Specialty Co., 1216 Fulton Bldg., Pittsburgh, Pa.

Demand for Paper Expanding in Philadelphia

Market Experiences Upward Trend, Despite Many Social Distractions—Volume of Orders for Fine Papers Steadily Increasing—Improved Request Developing for News Print for Commercial Purposes—Wrapping Papers Moving at Satisfactory Pace

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., October 25, 1926.—Gaieties that have been distracting features to the general business life of the city, as a result of the many entertainments given in honor of Queen Marie of Rumania and the foreign ambassadors attending the various dedicatory exercises of the Sesqui-Centennial Exposition, did not deter the upward trend in the paper market in the Philadelphia district and its surrounding territory. As the time approaches for the holiday activities in the mercantile world, dealers are preparing for their paper needs and are placing large orders for the various lines that may be required when the rush of the gift-giving season is at hand.

Brisker Business In Fine Papers

As the fine paper needs of the late October days are anticipated, the dealers in that branch of the trade have been enjoying an increase in the volume of orders, with present demand bulking heavier than in the early days of the month. There is a notable lack of mill announcements and folders customary at this season, due, as many believe, to the fact that mills have enough orders to consume all their production and are not overstocked. This absence of circularizing leads many of the Quaker City distributors to the conclusion that the mills have the paper question strongly in hand, with firm foundation for a healthier year with the advent of 1927.

News Print Very Active

In so far as the jobbers are concerned the news print market has been much brisker, with a lively demand emanating from the commercial printers and the larger publishing houses and advertising-printers. This demand for news print is apart from the tonnage orders that customarily are given under contract by the newspaper publishers, and indicates an improvement in the demand for advertising and commercial printed matter.

Greeting Card Stocks Improve

While there is ample room for improvement in greeting card specialties in bristol and other grades of cards, the market has shown signs of the betterment which might be expected at this season of the year. Die wiping papers also show that the customary pre-holiday market for greeting cards and engraved announcements is at hand, and is gaining in volume.

Wrapping Paper Move In Larger Volume

Anticipation of coming holiday needs is noticed in the widening of the market for wrapping papers and those grades of specialties used by the grocery and confectionary trades for Christmas packing. The mercantile requirements extend to all the various lines of manufactured goods in the clothing and millinery industries, and other industries where heavy holiday turn over is most in evidence in the closing months of the year. The bag market continues to hold steadily, while prices have shown no indication of weakening from the firmer levels to which they were raised within the past few months. Independent manufacturers have been enjoying added volume of business, and like their larger competitors, have been holding to the price quotations despite the anticipated reduction predicted by the dealers as a result of the rise among the more prominent manufacturers with a national patronage.

Building and sheathing papers are in good demand as the weather necessitates that building operations be protected against the colder outdoor atmospheric conditions. There has been no tendency towards a high price for many of the building specialties in the roofing or felt grades, despite the fact that the quotations on many of the raw materials in the rag grades have been advanced, and that there is a scarcity of such grades as are used in the manufacture of these building products.

Paper Stock Moving Steadily

As the mills maintain their pace of steady operation, the paper stock market holds to the firmer conditions prevailing in the manufacturing end of the industry. The grades of writing papers and old kraft have been advanced.

Paper In Royal Festivities

Paper played a part in the honors conferred upon visiting royalty during the week, when Queen Marie of Rumania was the guest of the city, and its municipal authorities extended a warm welcome in feasting and social and entertainment function in her behalf. When the Queen and her party, including Prince Nicholas and Princess Ileana, arrived at the B. and O. station last Thursday evening, a paper storm of confetti greeted and was showered upon her by the hordes of admirers who assembled there to welcome her. Dealers in confetti were well cleaned out before the day was over, so heavy was the need of the populace in their demonstration and appreciation of honors paid by her visit to the city and the Sesqui-Centennial Exposition.

Norbert A. Considine Entertains Finlands Ambassador

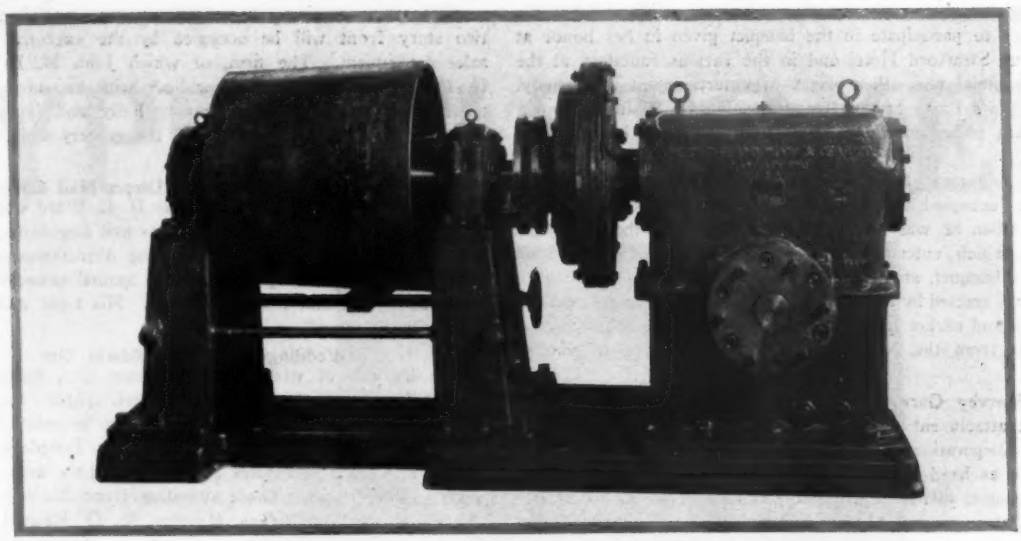
On the special day dedicated to the Scandanaivan countries at the Sesqui-Centennial Exposition, the honors of entertainment of the Finish Ambassador and participation in the dedication of the Finland Exhibits on the grounds, were conferred upon Norbert A. Considine, Philadelphia Consul for Finland, and head of the Paper House of Pennsylvania, 28 6th street. On Thursday, Consul Conisdine gave a dinner in honor of the United States Minister from Finland, L. Axstrom, at the Bellevue Stratfor Hotel, and then escorted him in the Mayor's Party, including the other Scandanavian ambassadors, to the Exposition, where he participated in the ceremonies on the grounds. Earlier in the week Mr. Considine journeyed to Lancaster, where he took part in the convention of the Second District Advertising Association.

Plan Mill Superintendents Meeting

Plans for the annual gathering of the Pennsylvania and New Jersey Division of the Mill Superintendents Association will be outlined when the special committee appointed by President J. Garfield Ramsay, of the local organization, and superintendent of the Dill and Collins Mills, meets in this city next week. President Ramsay has called the meeting to outline and discuss the second annual session of the division, which was organized last January when the National Mill Superintendents Association met here at the Hotel Benjamin Franklin for its annual convention. It is expected that the annual session of the local body, comprising a membership of the mill executives in the states of Pennsylvania, New Jersey and Delaware and southern New York, will take place next January, and details of the meeting will be perfected when the committee meets. Those called by President Ramsay for the work of arranging the gathering are Ward Smith, superintendent of the Philadelphia Paper Manufacturing Company, Manayunk, and John Bingham of the Richmond Mills of the Dill and Collins Company, with President Ramsay as Chairman.

Simon Walter On Royalty Reception Committee

The paper trade was signally honored at the dinner and other entertainments given in honor of Her Majesty, Marie of Rumania, through one of its most prominent associates, and a member of the city council, Simon Walter, head of S. Walter, Inc., 144 N. 5th street, appointed by Mayor Freeland Kendrick of Phi'adelphia to the Reception Committee, which welcomed the Queen. Councilman Walter joined with the notables of the nation and city



Cleveland Worm Gear Section Drive installed on an old machine at the Paul A. Sorg Paper Co., Middletown, Ohio.

Compare This Section Drive With Open Gears

Cleveland
C W & G Co.
WORM GEAR
REDUCTION UNITS

Standard Cleveland units are manufactured in capacities ranging from ½ to 150 horsepower and in a great variety of speed reduction ratios. They have proved successful for all sorts and sizes of paper mill machinery.

The paper machine section drive shown in the above picture is being eagerly adopted by paper manufacturers throughout the country. At a comparatively small cost it reduces maintenance charges greatly and eliminates production delays. In addition, it provides an efficient, clean, self-lubricated and easy-running drive.

The heart of the drive in the Cleveland Worm Gear Reduction Unit—the first worm gear drive to meet completely the requirements of paper machine operation. Cleveland worm gears have been tested through years of actual paper machine service and are now installed in the drives of thirty-seven machines with complete satisfaction.

In a Cleveland drive you not only get the best of worm gear equipment but its successful performance is also insured by our years of experience in this field. The drive can be installed on a single section or an entire machine with equal facility.

We can furnish a complete drive with pulley and magnetic clutch, as shown above, or a standard reduction unit alone, to be incorporated in the drive by your machine builder or engineers.

CLEVELAND
WORM & GEAR COMPANY

3270 EAST 80th STREET CLEVELAND, OHIO

who were selected as representatives of civic, social, and government bodies to participate in the banquet given in her honor at the Bellevue Stratford Hotel and in the various functions at the Sesqui-Centennial and other places of entertainment in the city. In the Mayor's Party at the Banquet table Mr. Walter occupied an important place among the leaders in the city's extension of hospitality.

Another important Sesqui-Centennial event in which Councilman Walter occupied a position of honor was that of Pan American Day, when he was assigned by the Mayor to the Reception Committee which entertained the ambassadors from the Latin nations at a banquet, and in the dedicatory ceremonies at the various buildings erected by those countries on the Exposition Grounds. Last Friday and earlier in the week he welcomed the Scandinavian commissaries from the Nordic lands across the seas, in similar capacity.

Harvey Garrett Joins C. S. Garrett Corp.

With the attachment of Harvey Garrett to the Staff of the C. S. Garrett Corporation, following many years of business on his own account as head of the Edwin T. Garret Paper Corporation, he again becomes identified with the company of which his father was one of the founders. As road representative manager of the C. S. Garrett Corporation, South Marshall street above Ludlow, he takes up the duties followed more than twenty years ago, when his father, Edwin T. Garrett, was associated with the firm as the partner of his brother Casper Garrett, then known as the E. & C. Garrett Company, and dating back to 1851 when the company was organized at 9 S. Front street. The Garrett family have long been identified with the paper manufacturing and distribution industry in this section of the country, and were pioneers in the art of paper making. The return of Harvey Garrett to the Philadelphia trade brings to its ranks the second of that name now associated with Quaker City distribution firms. The other member of the family is his cousin, Sylvester S. Garrett, head of the firm bearing his name in Third street, below Walnut, and a son of Sylvester Garrett, one of the founders of the Garrett-Buchanan Company.

Coarse Paper Men Meet

The coarse paper dealers included in the membership of the Philadelphia Paper Trade Association, met last Wednesday at the Bourse Restaurant for the purpose of discussing present market conditions and to hear the chairman of the occasion, and host, T. H. B. Smythe, review the many activities of the recent semi-annual gathering of the National Association at Chicago. While the paper dealers heard an official report on the National Association meeting of the delegate from the Coarse Paper Division of the Philadelphia Association, Charles A. Wilder, in a special arranged session for the purpose last week, the meeting and discussion under Mr. Smythe was purely an informal affair, apart from the routine business.

Fine Paper Men Attend Advertising Convention

Fine paper dealers from the Philadelphia trade who attended the various advertising conventions held within recent days were President Morton Gibbons-Neff, of the Poor Richard Club of this city, and of the Dill and Collins Company, who journeyed to Lancaster, Pa., to attend the Second District Advertising Convention, and Frank and Harry M. Blair of the same firm, who attended the Direct Mail Advertising Convention held in Detroit last week.

John M. Driver Co., Plans Removal To New Home

Before the holidays are at hand, the John M. Driver Company, 1644 N. 55th street, manufacturers of glassine bags and wrappings, and other specialties, will be entirely settled in its new home now in course of construction at Lancaster avenue and 57th street. The finishing touches are being applied to the building, and it is expected to be ready for occupancy by early December. The new location will provide an increase in equipment in the large single story wing which adjoins the rear and is to be devoted to the manufacturing of the glassine specialties, while the two story front will be occupied by the executive offices and sales department. The firm, of which John M. Driver and J. H. Rex are proprietors, is now busy with an entensive advance order list for holiday specialties in holly and fancy Christmas wrappings and bags of glassines for the grocery and confectionery trades and like purposes.

George W. Ward Speaks At Direct Mail Convention

President George W. Ward of the D. L. Ward Company, who is associated with the Paper Merchants and Legislative Committee of the National Direct Mail Advertising Association as chairman, was listed among the speakers at the annual convention of that organization held last week in Detroit. His topic was "Value of Quality In Printing."

Wedding Bells For Edwin Orr

With the call of wedding bells, Edwin Orr, manager of the Philadelphia firm of Infante Brothers, paper stock dealers, journeyed to Pottstown, Pa., last Sunday to be united in marraige with Miss Gertrude Pollock, at the Mercy Temple of Truth in that town. Trade associates from Philadelphia were among the guests at the Temple. Those attending from this city were John Infante, of the firm, Frank Murphy, M. O. Raiguel Company; Harry Bailey, the Hemingway Company; Max Leese and Miss Marie Doyle, office manager of the Infante Brothers; and Tom Kenney, of the International Trading Company. Following the ceremonies the young couple departed for a prolonged honeymoon.

Ohio Printers Visit Kalamazoo

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., October 25, 1926.—There was a thoroughly representative gathering of printing house executives in Kalamazoo Saturday and Sunday, the occasion of the Ohio district meeting of the International Association of Printing House Craftsmen in this city. The Kalamazoo River Valley Club was host on this occasion and from 150 to 200 guests were in attendance, coming from similar clubs in Cincinnati, Cleveland, Dayton and Toledo, Ohio, and Detroit and Grand Rapids, Mich.

Among the guests were the international officers, J. J. Devinney, Washington, president; L. M. Augustine, Baltimore, secretary, and Harvey Weber, Buffalo, treasurer.

The delegates arrived Friday evening and early Saturday morning. Practically all proceedings of importance took place Saturday. These included an inspection of the Kalamazoo Vegetable Parchment Company's great plant, with a luncheon at the Parchment Community House and a business session following. Saturday evening was devoted to banquet and entertainment in the Masonic Temple. There were addresses by the international officials. Peter Servaas, assistant to President Felix Pagenstecher of the Bryant Paper Company, was toastmaster. Dancing closed the regular program.

Individual Drinking Cup Co. Enlarges Plant

Another addition to the large plant of the Individual Drinking Cup Company at Easton, Pa., is rapidly nearing completion and it is expected that the new part of the building will be ready for occupancy some time during November.

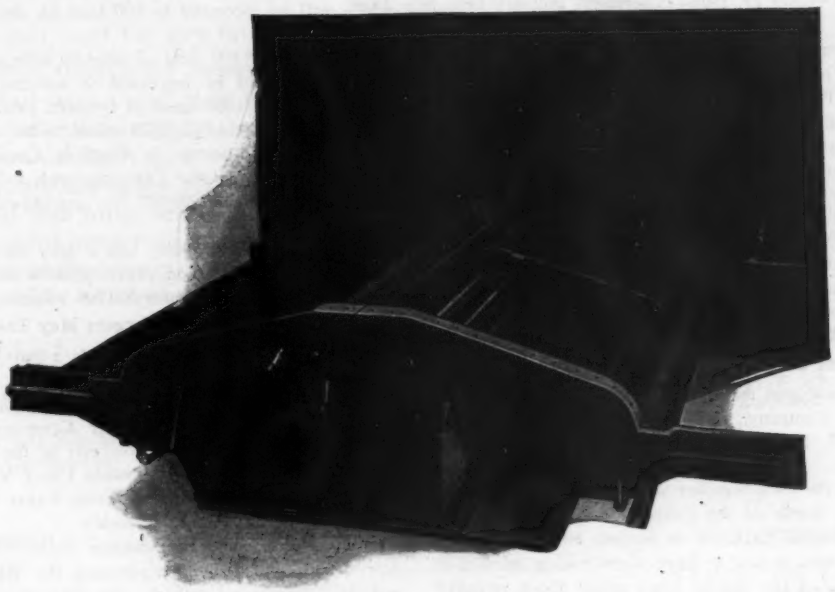
The addition is "L" shaped the widest portion attaching to the Eastern end of the present building, and adds one hundred feet to the total length of the building, eighty feet wide. The total length of the building is now 500 feet.

The "L" extends North and is 120 feet long, by 80 feet wide. This makes the total Eastern frontage of the addition 200 feet

The building is three stories in heighth of modern reinforced concrete construction, corresponding to the building now in use. It provides 52,800 additional square feet of floor space.

The last prior addition to the building, which gave 32,000 extra square feet of floor space was completed on December 1, 1925.

TYPE "E" STOKER



Simple—in design and operation

The Type "E" Stoker is exceedingly simple to operate. Automatic control relieves the fireman of the duty of continually adjusting the air grates or speed of blower and feed of coal. It is only necessary to dump the ash tray when sufficient ashes accumulate, which can be determined by looking through peep-holes in the front access doors.

Although the Type "E" Stoker is largely automatic in operation its mechanism is very simple—few parts and each of the simplest possible construction, rigidly yet accurately built.

Send for further particulars.

COMBUSTION ENGINEERING CORPORATION
POWER PLANT LIMITED EQUIPMENT

STOKERS OF ALL TYPES
PULVERIZED FUEL SYSTEMS
STEAM TURBO-GENERATORS
HIGH SPEED STEAM ENGINES
AIR PREHEATERS
RADIAL BRICK CHIMNEYS
COAL HANDLING EQUIPMENT
ASH CONVEYORS AND HOPPERS
SUSPENDED FLAT ARCHES
DE-AERATORS
CONDENSERS OF ALL TYPES
OIL BURNING EQUIPMENT
PULVERIZING AND GRINDING MILLS
RECORDING INSTRUMENTS
INDUCED AND FORCED DRAFT FANS
DIESEL OIL ENGINES

HEAD OFFICE—TORONTO VANCOUVER, MONTREAL, WINNIPEG

Big Canadian News Print Mergers Are Rumored

Combination of International Paper and Backus Interests Said to Be Under Consideration—Purchase of Eddy Mills at Ottawa by I. P. C. Reported to be in a Process of Negotiation —Rival Organization Groups May Also Be Formed

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 25, 1926.—The whole industry here is agog with news of pending developments on a scale of great magnitude in connection with the consolidation of some of the leading news print plants in this country. Briefly, it is stated that a combination of the vast interests of the International Paper Company in Canada with the Backus interests in the West is under consideration; that the purchase of the big Eddy mills at Ottawa by the International Paper Company is in process of negotiation; and that a rival organization is being formed, to include the St. Maurice Valley Corporation with the Port Alfred and Wayagamack Pulp and Paper Companies. Contingent on these rumors is the news that the fate of the Laurentide Company is in the balance and that this company, being asked by unnamed interests to name a price for its stock, has placed the figure at $125, and has been turned down.

President Graustein and Victor Drury

It is now an acknowledged fact that President Graustein, of the International Paper Company, and Victor Drury, one of the directors of the E. B. Eddy Company, of Ottawa, have been in conference at Ottawa, that President Graustein looked over the Eddy plant, and that the two, together with General White, manager of the Gatineau works of the International, afterwards left for Montreal on a special train. It is further recalled that the Hon. R. B. Bennett, who is said to have a controlling interest in the Eddy concern, stated last spring, when asked about rumored negotiations, that it would be "a question of price."

After his arrival in Montreal on Thursday last, President Graustein is stated to have had long conferences with E. W. Backus, Minnesota pulp, paper and power magnate, operating chiefly in Western Canada, and afterwards returned to New York, taking Mr. Backus with him.

Extent of Eddy Plant

The E. B. Eddy Co.'s plant covers an area of 75 acres, and timber limits covering 2,000 square miles on the Ottawa and Gatineau rivers. The company's employees number 2,500. The daily output of the mills comprises 120,000,000 matches, 7 tons tissue, 25 tons board, 155 tons news print, 1,000,000 paper bags, 8 tons bags and manila, 15 tons wrapping paper, and 10 tons book and writing paper.

The Wayagamack company has recently come into the limelight through the purchase, in conjunction with the Port Alfred and St. Maurice Valley Corporations, of the Island of Anticosti and the formation of the Anticosti Corporation. The Wayagamack Company has a daily production of 150 tons groundwood pulp, 240 tons sulphate or kraft paper, 200 tons news print, and 120 tons kraft or wrapping paper.

International Paper Co.'s Output

The International Paper Company has a daily production in Canada of 945 tons groundwood pulp, 785 tons sulphite pulp, and 1,280 tons news print. In the United States and Canada the company has 1,604,000 acres of timberlands, stumpage rights covering 55,000 acres, and 9,069,000 acres of Canadian Crown timber limits. Pulpwood lands owned in fee approximate 6,000,000 cords and on Crown lands 28,000,000 cords.

The St. Maurice Valley Corporation, formed this year, operates the St. Maurice Paper Company and the plant of the Belgo-Canadian Paper Company. One mill at Three Rivers has a daily capacity of 265 tons of news print and 65 tons sulphate pulp; one at Shawinigan Falls has a daily output of 400 tons news print, which will be increased to 600 tons by the end of the year.

The Port Alfred Pulp and Paper Corporation has an annual production of 48,000 tons of sulphite pulp, and 200 tons of news print, which will be increased to 400 tons by the end of the year. It owns 50,000 acres of freehold timber and controls under lease from the Province 1872 square miles of timber areas.

The Backus interests in Western Canada include the Fort Frances Pulp and Paper Company, with a daily output of 300,000 lbs. news print and 200,000 lbs. groundwood. They also have vast timber interests.

The Laurentide Company has a daily output of 750,000 lbs. of news print and half-tone paper, 100,000 lbs. pulp board, 700,000 lbs. groundwood (dry) and 300,000 sulphite fiber.

Three Great Mergers May Take Place

Summing up, it would seem that events are moving towards the formation of three great consolidations, namely:

Group No. 1.—The Spanish River and Abitibi companies, which also control the Manitoba Paper Company and the St. Anne Paper Company, with large interests in the Fort William Paper Company and also in the Escanada Paper Mills in Wisconsin.

Group No. 2.—The International Paper Company, the Eddy Company and the Backus interests.

Group No. 3.—The St. Maurice Valley Corporation, the Port Alfred Pulp and Paper Corporation, the Wayagamack Company, and the Laurentide Company. In this connection it is significant that Sir Herbert Holt, who is behind the St. Maurice Valley Corporation, is said to be the largest shareholder in Price Brothers. Furthermore, it is thought that the Brompton Pulp and Paper Company, which has a daily output of 240,000 lbs. news print, and large products of wrapping paper, boxboard, sulphate pulp, and groundwood, may figure in this consolidation.

Eddy Rumors Denied

Meanwhile formal denial of the suggested purchase of the Eddy Company by the International Paper Company has been issued. The Ottawa Journal says:

"George H. Millen, president of the E. B. Eddy Company, Ltd., stated today that rumors to the effect that the Eddy Company had been sold were absolutely unfounded. Neither were negotiations for the alleged sale pending.

"Victor Drury, of Montreal, has become a director of the company, succeeding S. S. Cushman, who has resigned from the board.

"Mr. Drury left Ottawa for Montreal yesterday with A. R. Graustein, president of the International Paper Company, Ltd., who was in the city."

Binder Board Association Meets

WASHINGTON, D. C., October 26, 1926.—The monthly meeting of the Binder Board Manufacturers Association was held here last Friday following the simplification meeting at the Department of Commerce. Following the meeting, routine matters were taken up.

Oregon Pulp & Paper Co. Installs Elevators

The Oregon Pulp and Paper Company, Salem, Ore., has let the contract for two large freight elevators which are now being installed in their plant in that city by the Portland Elevator company.

FOR GREATER PRODUCTION in WOOD PULP and PAPER MAKING!

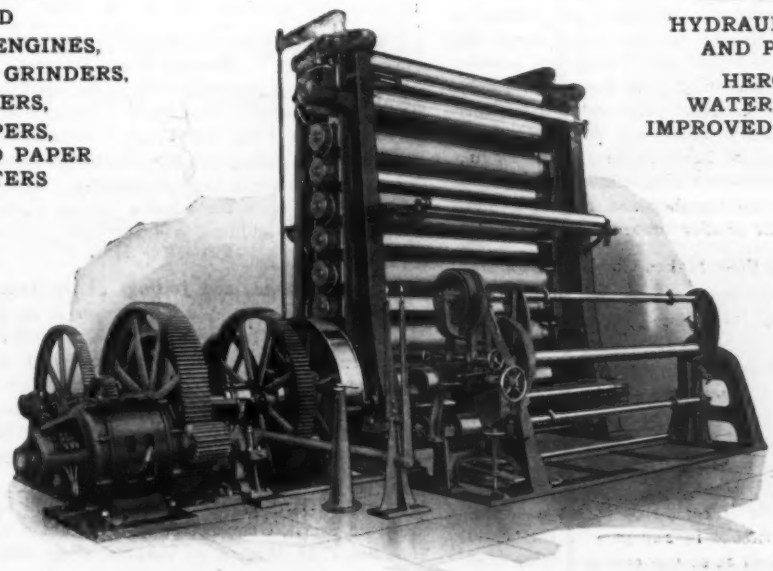
For over sixty years the Holyoke Machine Company has made a specialty of paper and pulp mill machinery, and this long experience, together with patented improvements, enables them to build machines remarkably economical both in consumption of power and operating expense. Modern requirements and competition in the paper industry demand machines designed for long service with maximum efficiency. That is why so many successful paper manufacturers today are sending repeat orders for Holyoke Machine Company machinery. Their long experience and reputation for highest quality of workmanship has merited such confidence.

Largest Makers of CALENDERS and PLATERS
For Finishing All Kinds of Paper and Cardboard

COTTON and PAPER ROLLS
With Patented Fastenings

WASHING AND BEATING ENGINES, WOOD PULP GRINDERS, BARKERS, CHIPPERS, RAG AND PAPER DUSTERS

RAG CUTTERS, HYDRAULIC PUMPS AND PRESSES, HERCULES WATER WHEELS IMPROVED GOVERNORS



HOLYOKE MACHINE CO.

HOLYOKE MASS.

Makers of Improved Machinery for Wood Pulp and Paper Mills

Ontario Paper Mills Operating at Capacity

Volume of Business This Year Will Probably Be Greater Than in 1925—Profits May Not Be As Large, Due to Keen Competition Keeping Down Prices—Pulp Market Rules Firm, With Stocks on Hand Limited—Many New Lumber Camps Being Installed

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., October 25, 1926.—General trade conditions in the pulp and paper industry continue very fair and October should prove a decidedly good month with most of the jobbers. The mills are also well employed and are receiving quite an amount of transient business in addition to their contract orders. These will keep the plants going until well into the new years. It is announced that the new machine which the Provincial Paper Mills Company is installing in the Port Arthur Division, will be in operation early in 1927, which will double the production of the plant.

There is a feeling that business will keep up very well during the coming month and, when the books of most concerns are closed for 1926, the record should show a bigger volume than in 1925 although profits may not be quite as large. The cost of doing business is constantly increasing and the margin of profit is very close in some lines, owing to stiff competition, which has at times resulted in some price reduction. This has been brought about now and then by importations from other countries, but gradually the amount of paper imported by Canada is decreasing, and local producers have specialized to an extent which successfully meets outside offerings.

The pulp situation is firm and there are no large stocks on hand. Mills are buying as required and quotations are unchanged. Most of the news print plants are buying as required and quotations are unchanged. Most of the news print plants are buying up large quantities of pulpwood this season and many camps are being installed. High wages are being paid by pulpwood jobbers, which have resulted in taking help away from lumber companies. It is declared that fully 400,000 cords of pulpwood will be taken out this winter north of Sudbury, which will be a record cut. Many lumbermen, who heretofore have confined their logging activities to their own lines, are branching out in pulpwood in order to keep their organizations together and to find a more ready market for some of their smaller timber.

Ontario's Aerial Fleet Makes Good

Walter C. Cain, Deputy Minister of Lands and Forests for Ontario, recently stated that the Air Force of the province was maintained not only for the purpose of patrolling forest areas ot detect and extinguish fires, but also to map, sketch and make a general survey of the wooded resources of the province. This includes making an inventory of the types and quantities of timber in collaboration with ground parties. The Air Force is also used to transport to outlying districts in an emergency, nurses, doctors and medical supplies. Mr. Cain added that in Ontario all photographic work of the Department is completed by its own staff and that no flying force in existence in any part of the world, private or otherwise, is maintained at so low cost per flying hour as that of Ontario. Practically all flying is done by Canadian boys who served in the war.

Publicity in Mill Safety Work

The Ontario Pulp and Paper Makers' Safety Association, Toronto, of which A. P. Costigane is secretary-engineer, is interested in a safety calendar for 1927 which will be handsomely illustrated and will drive home forcibly in picture certain hazardous practices which should be guarded against. There will be inserted with each copy an extra sheet on which will be printed in condensed form "first aid" instructions. The calendar is a purely Canadian effort and this method of appealing to employees of pulp and paper mills is an effective one. It is hoped that each mill in Ontario and in the other provinces will see its way clear to present one copy to each employee which, Mr. Costigane says, would help greatly to reduce the enormous cost of preventable accidents in the pulp and paper line.

Presentation to Mr. Allen

T. J. Allen, vice-president of Paper Sales, Ltd., Toronto, who was recently married, was presented with a handsome mantel clock by the members of the Blue Mountain Trout Club, and extended congratulations. The presentation took place at the Scarboro Golf Club, following the opening of a golf tournament, which was won by John Hewitt, Jr., president of Paper Sales, Ltd. Mr. Hewitt will hold the trophy for a year, after which it will again be competed for.

Daily Newspapers Decrease

The number of newspapers in Ontario is gradually decreasing, and all the smaller cities of 40,000 or less in population, which formerly supported two or three dailies, have now only one. The higher cost of production, strenuous competition from the big city publications, and other causes, have contributed to consolidation in most centers. It is now announced that Kingston, Ont., a city of 25,000, which was one of the last places to have two papers, will have only one in future. The "Standard," which is 117 years old, and the "Whig," which is 92 years old, are being merged through the purchase by H. B. Muir, of London, of the "Standard."

Newago Wood Harvest

The Newago Company, which is the woods operating organization of the Thunder Bay Paper Company, at Port Arthur, and the Wisconsin Pulp and Paper Company, whose interests are consolidated, is taking out considerable pulpwood at Hale, Mileage 267, on the Algoma Central Railway. The Newago Company has 350,000 acres on the Algoma Central Railway upon which to operate and, in addition, will purchase pulpwood wherever possible.

Notes and Jottings of the Industry

Workmen are erecting a large tower at the Lincoln paper mill, Merritton, Ont. The tower, which will supply water for a sprinkling system, now being installed at the plant, is 75 feet high.

Gerard Falkenberg, of the Canadian Paper Export Company, Montreal, was in Toronto recently calling upon the trade after a business trip to various cities in the United States.

C. I. Hill, of the Warren Manufacturing Company, New York, was in Toronto lately transacting business.

Colonel C. H. L. Jones, P. B. Wilson, and George R. Gray, of Sault Ste. Marie, Ont.; Secretary J. G. Gibson, of Toronto; T. W. Sime and T. H. Watson, of Toronto, along with George H. Mead, of Dayton, Ohio, president, were in New York recently attending a meeting of the directors of the Spanish River Pulp and Paper Mills.

A. P. Costigane, of Toronto, who is a member of the Engineering Section of the National Safety Council and secretary-manager of the Canadian Pulp and Paper Makers' Safety Association, is attending the National Safety Council meetings in Detroit. Among the other representatives present are A. R. White, Chief Sanitary Inspector for Ontario; C. Nelson Gain, Interlake Tissue Mills, Toronto; John Leslie, of the Lincoln Pulp and Paper Company, St. Catharines; and F. M. H. Cushing, of the Provincial Paper Mills, Thorold, Ont.

Cable Conveyor handling Pulpwood to mill.

Pulpwood Stackers designed and built to suit various conditions and capacities.

-in the Manufacturing Process of the Pulp and Paper Industry

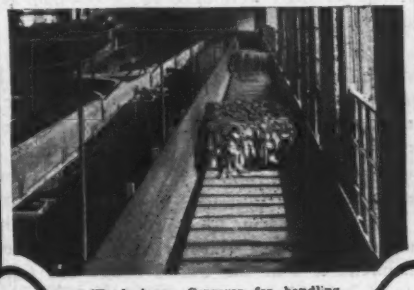
TO find the most simple, economical and effective methods of handling materials in pulp and paper mills—is a goal toward which Jeffrey Engineers have been striving for a half century.

Today—a list of the leading concerns who have profited by the installation of Jeffrey Labor-Saving Equipment to keep pace with world demands, constitutes a "blue book" of the industry.

Whatever the material to be handled, or the conditions to be met, you can put the problem up to Jeffrey Engineers with the confidence that the equipment recommended will exactly fit the requirements.

Belt Conveyor for handling Pulp Laps, Chips, etc.

Chain Conveyor handling Logs to mill.



Wood Apron Conveyor for handling Bundles of Rags, Paper Rolls, etc.

The Jeffrey Manufacturing Company

931-99 North Fourth St., Columbus, Ohio

New York	Pittsburgh	Cleveland	Milwaukee	Los Angeles
Buffalo	Scranton, Pa.	Charleston, W. Va.	St. Louis	Birmingham
Rochester, N. Y.	Boston	Chicago	Denver	Charlotte, N. C.
Philadelphia	Cincinnati	Detroit	Salt Lake City	Montreal

JEFFREY

MATERIAL HANDLING EQUIPMENT

New York Trade Jottings

The Thomas J. McCormick Paper Corporation, Ontario Specialties, Inc., and the Adirondack Pad Company, have opened offices at 30 East 42nd street, New York.

* * *

L. J. Dorenfelt, sulphite engineer, and consultant for the West Virginia Pulp and Paper Company, has arrived in New York from Norway, on one of his regular visits.

* * *

O. W. Mielke, president and general manager of the Blake-McFall Paper Company, of Portland, Ore., is making an extended tour of the eastern coast. He is accompanied by Mrs. Mielke.

* * *

The Penn Fibreboard Corporation, manufacturers of test liners for corrugated and fiber boxes, folding box boards, chip board, felts and mill wrappers, of York, Pa., announce the opening of New York offices at the Canadian Pacific Building, 342 Madison Avenue.

* * *

Bernard Sharp has resigned from the Republic Bag and Paper Company, where he was export manager, and has organized his own firm under the name of the Sharp Paper and Specialty Company, Inc., to do an export and import business. The address of the new concern is 200 Fifth Avenue, New York.

* * *

A motion picture on "Paper Making" is to be given at the Columbia University School of Business, Broadway and 116th street, today, Thursday, at 8:15 p.m. The lecture, which will be given under the auspices of the American Writing Paper Company, tells the story of paper-making from the cutting down of the spruce timber to the delivery of the completed product.

* * *

The appointment of R. E. Hellmund to the newly created position of chief electrical engineer of the Westinghouse Electric and Manufacturing Company has been announced. Mr. Hellmund has invented many improvements to electrical devices and has taken out nearly 300 patents here and abroad. He entered Westinghouse employ in 1907 as designer of induction motors. In 1913 he was placed in charge of designing all direct current and alternating current railway motors.

In 1921 he became engineering supervisor of development.

* * *

The Corn Products Refining Company, of 17 Battery Place, New York, reports net income of $8,607,239, after depreciation and Federal taxes, for the nine months ending September 30, as compared with $5,262,023 in the same period last year. For the quarter ended September 30 the net income was $3,166,058 after the above charges, against $2,722,091 in the preceding quarter, and $1,815,959 in the third quarter of 1925.

Earnings per share were $1.08 on the common as compared with 54 cents last year.

* * *

Jacob de Julin, managing director of the A. B. Kaukas Fabrik, manufacturers of sulphite and kraft pulp, lumber and spools, in Finland, and also president of the Finnish Cellulose Association, which controls the sale of practically all the mills making chemical pulp in Finland, arrived in New York recently aboard the White Star liner *Olympic*. Mr. de Julin was accompanied by John M. Gylphe, director of A. Ahlstrom Osakeyhtio, Norrmark, Finland, manufacturers of paper, pulp and lumber. These gentlemen intend to tour the United States and Canada, visiting a number of industries.

Bright Outlook for Upper Hudson Paper Mills

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., October 23, 1926.—With the plans for regulating the flow of the Hudson River practically certain of becoming a reality, the pulp and paper industry of the Upper Hudson Valley is facing a future which, from every indication, promises to mark a period of general expansion for the industry. During 1927 it is expected that minor details will be completed and the first state bond issue of $3,000,000 floated to help defray the cost of construction of the Sacandaga Reservoir, which is the first step in the project for regulating the flow of the river.

Already many of the pulp and paper firms of the region have formulated plans for expansion. Some of these plans have been put into effect on a small scale during the past year. The West Virginia Pulp and Paper Company, of Mechanicville is now completing an addition to the Mechanicville plant and the Gillette Fiber Mills, also of Mechanicville, a new concern which began operations last spring, has completed a new beater room. The Fort Miller Pulp and Paper Company, of Fort Miller, has made improvements and erected new buildings for increased output with promise of greater expansion to come. Other mills along the Upper Hudson have made plant changes during recent months for securing greater production but the real expansion is expected with the starting of work on a large scale on the Sacandaga Reservoir.

News Print Service Bureau Convenes

The Fall meeting of the News Print Service Bureau was held at the Hotel Commodore, New York, Wednesday, October 20. The program for the business meeting included reports on News Print Production, Shipments and Stocks; Imports of Overseas Paper; News Print Consumption and Publishers Stock; Volume of Advertising; New Machines 1926-1927, and General Conditions Throughout the Industry.

Following an enjoyable and well-attended luncheon in the Tavern Room, addresses were given on "Newspaper Advertising Tendencies," by Arthur T. Robb, Jr., managing editor of the Editor and Publisher; and "The Business Situation," by Byron W. Holt, economist, of Goodbody & Co.

The Fall meeting of the Cost Accountants and Engineers of the News Print Service Bureau members was held at the Canadian Club, Hotel Belmont, on Tuesday, October 19. At the morning session an instructive and interesting address was given by Eric A. Camman, manager of the System Department of Peat, Marwick, Mitchell & Co., New York, who took as his subject, "Budgetary Analysis of Actual and Expected Net Profits."

After an excellent luncheon, Walter N. Polakov, consulting engineer, New York, addressed the gathering on "Benefits Resulting from Incentives and Inducements in Paper Mills," which was thoroughly appreciated by all present.

Mrs. Frank C. Overton

Mrs. Ruth Bynner Overton, wife of Frank C. Overton, of Castle & Overton, New York, passed away last Thursday at the Overton summer home in Manchester, Vt. Mrs. Overton was in her 56th year and had been in poor health for several years. She is survived by her husband, two sons, Carlton B. Overton and Richard C. Overton, and a daughter, Mrs. Frank C. Myers, nee Miss Helen Overton. The funeral was held last Saturday at Manchester.

To Dam North River

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 25, 1926.—The Quebec Streams Commission has decided to regulate the flow of the North River in Quebec by the construction of a storage basin on the upper section. This will improve conditions for the Rolland Paper Mills and other concerns using power on the river.

Binder Board Simplification Conference

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 25, 1926.—The binder board simplification conference was held at the Department of Commerce on last Friday, to which had been invited manufacturers, jobbers and users. The manufacturers association was represented 100 per cent with the exception of one mill. No representatives of the jobbers attended the conference and only Frank P. Walton, of the Kingsport Press, Kingsport, Tenn., attended on behalf of the bookbinders.

It was explained at the convening of the conference by H. R. Colwell, of the Division of Simplified Practice, Department of Commerce, that the Employing Bookbinder of America had not been invited to attend the conference as an association owing to an oversight, but most of its individual members had been invited.

A telegram from the association was read to the conference asking for its postponment but Mr. Colwell explained that more than 300 invitations had been sent out and he did not feel justified in postponing the conference. It was agreed, however, that whatever recommendations were adopted at the conference should be submitted to the bookbinders and when they have had an opportunity to "get together," a further conference will be held in New York City between the binder board manufacturers and the bookbinders to iron out any differences. This date was tentatively set as November 30.

As a final result of the conference the manufacturers agreed to the following five classes to become effective April 1, with the consent of the bookbinders and to be subject to annual revision:

1-20 x 30 including 20½ x 30½
2-23 x 29 including 22 x 28
22½ x 28½
3-26 x 32
4-26 x 38
5-34 x 44 including 33 x 44.

An agreement was also made as the special runs to be added to this simplification of sizes to read as follows;

"An economic mill run of not less than five tons will justify any special size not specified above." This was designed to take care of the special sizes required.

Conference Called to Order

The conference was called to order by Mr. Colwell, who told of some of the simplification work of the department in other industries. He spoke also of some of the details of the survey made in the binder board industry and of the results shown by the survey.

In this connection Mr. Colwell pointed out that the figures which had been supplied to the Division by the manufacturers covering 1924 showed that the gross turnover was 1,000,000 bundles or 25,000 tons. These were produced, the figures showed, he said, in 718 different sizes of sheets, varying by as little as ¼ inch, and from 1 to 27 different thicknesses, making a grand total of 1928 different items. The survey showed also, he said, that 945 items of size and thickness were sold in individual lots of less than 1,000 bundles each, and that all of these amounted to less than 7 per cent of the sales. There were 790 items which were sold in lots of from 100 to 1,00 bundles per annum. Mr. Colwell pointed out that in only 17 items did the annual sales represent more than one per cent of the grand total for the year, the aggregate of these being 26 per cent of the annual sales.

Leigh H. Davey, of the Davey Company, Glenn Ridge, N. Y., and president of the Binder Board Association told the conference that the mills favor doing this simplification work gradually. He also took up the situation at the Government Printing Office and called attention to the fact that that branch of the industry has standardized on 25 x 30 as the proper size for binder board for its use. There was some discussion as to whether this should be included in the sizes of the program, but it was not included. Mr. Davey said that in his opinion this matter should be kept before the users of binder board and they should work toward the man who originates odd sizes and discourage him. Some exceptions should be made in cases of large orders but Mr. Davey thought that those buying small orders should be forced in line on the simplification program.

Mr. Walton, on behalf of the bookbinders, asked that time be allowed them to go over the situation and meet later. As stated above this will be done. He said that he was not authorized to take any action on the part of the bookbinders association.

Among those attending the conferenece in addition to those mentioned were; Eugene C. Betz, Consolidated Paper Company, Monroe, Mich.; William H. Elliott, William Green Corporation, New York; A. B. Goodrich, Riverside Paper Manufacturing Company, Glastonbury, Conn.; Edward Kerr, Jr., Kerr Paper Mill Company, Downington, Pa.; N. S. Meese, Paper Division, Department of Commerce; Edward H. Norton Company, Westchester, Conn.; O. M. Porter, secretary, Binder Board Manufacturers Association, New York; William J. Rider, Westport Paper Company, Norwalk, Conn.; Scribner, paper laboratory, Bureau of Standards.

Trade Marks Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, Barrister Bldg., Washington, D. C., trade-mark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

RELY-ON-US:—No. 228,331. Reliance Paper Company, Marinette, Wis. For paper covers for furniture, caskets, and other articles.

WALDRON—No. 234126. Jacksonville Paper Company, Jacksonville, Fla. For toilet paper.

OLD MILLSHIRE BOND—No. 234,975. J. J. Murphy Paper Company, Inc., New York City. For bond paper.

HAWKEYE—No. 235,010. Western Grocer Company, Marshalltown, Iowa. For toilet paper.

LEVELRITE—No. 235,019. Joseph Berg, New York City. For check books, account books, ledgers, and entry books.

PICKWICK—No. 236,274. Kansas City Wholesale Grocery Company, Kansas City, Mo. For pencils and school tablets and toilet paper.

TRADE-MARK RESIDING IN THE COLORING OF THE CORE ON WHICH THE PAPER IS WOUND GREEN—No. 231,391. Midstates Gummed Paper Company, Chicago, Ill. For kraft paper, sulphite paper, bond paper, ground woood paper, and Manila paper, both gummed and ungummed, sold in rolls.

AUTOROLL—No. 234,691. Autographic Register Company, Hoboken, N. J. For plain lithographic and printed paper strips, leaves, and sheets for use in manifolding registers, in typewriters and in other machines.

AUTOPACK—No. 234,692. Autographic Register Company, Hoboken, N. J. For same as above.

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THE ANNUAL MILL NUMBER

The Annual Mill Number of the PAPER TRADE JOURNAL visualizes in a very interesting manner the marvelous expansion that is taking place at the present time in the pulp and paper industry on the North American continent. It has not been possible to include all of the new mills and mill improvements that have been made during the past year in this number, but most of the high lights have, it is believed, been included. This survey of the growth and improvements of the industry in recent months presents a picture that has undoubtedly never been equaled in the history of the paper making business in North America.

The numerous improvements noted especially indicate that pulp and paper manufacturers are keenly alive to the fact that the most thoroughly up to date machinery must be constantly installed in order to maintain their position as the leading paper makers of the world.

Canada has during the past year, as has been the case for a number of years past, shown the most noteworthy expansion in the paper business. The most important place in this expansion has been taken by the International Paper Company which during the first half of 1926 placed in operation five additional news print machines while four more machines, 270 inches in width and the largest in the world, are now under construction at the company's new Gatineau mill and will come into operation early next year.

The unusual activities of the International Paper Company and its subsidiary, the Canadian International Paper Company, were interestingly summarized recently by President A. R. Graustein, who stated, "Consumption of news print in the United States and Canada is running at least 15 per cent ahead of last year. Bringing into operation the new news print capacity constructed at Three Rivers, together with the good demand for news print, improved earnings during the first half of the year and the company earned the proportionate preferred dividend during the period. Earnings for the full year are expected to exceed the total common and preferred dividend requirement for 1926. On the basis of present conditions, the increase in earnings is expected to continue during the coming year. New England Power Association, of which International owns 116,970 shares, is now on a dividend basis.

"In 1927, the Three Rivers will be able to operate its full capacity of 700 tons of news print a day and the new Gatineau mill, starting in April, should have its full capacity of 600 tons of news print a day available by July. Its wood supply is even cheaper than that of Three Rivers.

"Since last October, the company has acquired well over 10,000,000 cords of pulpwood in the United States and Canada. Kipawa sulphite expansion is completed and doubling capacity of the kraft mill at Bastrop, La., is nearly completed. Construction of a new kraft mill in the south is contemplated. Two of the three power plants on the Gatineau River are nearing completion and the third has been started; their initial capacity will be 373,500 hp. Construction of a 60,000 hp. development in New Brunswick has been started and a paper mill in conjunction with it is planned. Wharves at Three Rivers have been extended to a quarter of a mile in length and can accommodate ocean going vessels."

Other outstanding improvements in the Dominion are the plant of the Manitoba Paper Company, Ltd., at Pine Falls, Man., with its two 226 inch Fourdriniers and a daily capacity of about two hundred and fifty tons of news print which will begin operation early in December of this year, and the soda pulp plant of the Canadian Cellulose Company, Ltd., at Cornwall, Ont., which will begin operation early in 1927 and which will make the second plant of this kind in Canada.

In the United States the most additions have been made to the industry in the Pacific Northwest where in the state of Washington alone four new pulp and paper mills have just been built or are being built and will come into operation shortly. There are also numerous reports of additional similar enterprises for this section where abundant and easily accessible wood for raw material and ample and impressive water power offer natural advantages that cannot fail to prove greatly attractive to prospective pulp and paper manufacturers.

Attention is especially directed in this Annual Mill Number to the interesting story of his visit to some sixty pulp and paper mills by Mr. William G. MacNaughton, secretary of the Technical Association of the Pulp and Paper Industry and editor of the Technical Section in the PAPER TRADE JOURNAL, in company with Mr. R. S. Kellogg, secretary of the News Print Service Bureau. Mr. MacNaughton in his article confirms what has already been said about the enterprise of the mills in adopting new methods and installing new and modern machinery thoroughly suited to their needs. This policy is bound to insure the continued success and expansion of the paper industry on the North American continent with increasing rapidity.

FOREST TAXATION

A nation-wide investigation of forest taxation has just been launched by the Department of Agriculture, the work having been initiated by the Forest Service last July in the forest regions of Minnesota, according to Chief Forester Greeley. It will soon be extended to Wisconsin and Michigan and thereafter to the other important forest regions of the United States.

Landowners are carrying a heavy burden of taxation, Secretary Jardine asserted, and one of our most important tax problems is to make sure that they are not forced to carry more than their share, for excessive land taxation discourages the production of crops, whether of food or of timber.

"The forest tax problem," said Dr. Fred R. Fairchild, professor of economics at Yale, in charge of the Government investigation, "is an integral part of the general property tax problem. It can not be isolated from other property taxation and studied alone, but must be studied in its relation to all other forms of the general property tax. Before we can successfully revise local taxation, whether of forest or any other class of land, we must have a thorough understanding of the needs of the local government for roads, schools, and other public purposes as well as of the sources of tax revenue and of the comparative load borne by all classes of property. So our investigation has got to embrace the whole field of property taxation, and if I am not mistaken it will throw light not only on forest taxation but on all phases of property taxation. But we must not expect results too soon. We are trying to develop basic principles of property taxation as applied to growing forests. These principles can not be formulated out of thin air but must be based on a patient, detailed, intensive field of study of taxation practice in typical selected counties throughout the country. When we get these principles worked out, however, I feel sure they will be of assistance to the States in framing fair methods of forest taxation."

The Chemistry of Wood

A welcome addition to the Chemical Society Monogram Series is "The Chemistry of Wood," by L. F. Hawley, senior chemist of the Forest Products Laboratory, Madison, Wis., and Louis E. Wise, professor of forest chemistry at the New York State College of Forestry, Syracuse University.

The aim of this volume was to bring together within the compass of a single book, data pertaining to the chemistry of wood. The outstanding contributions on a subject that has received but scant attention in the United States are excellently summarized.

The results of purely scientific investigations on wood chemistry have been stressed and the many gaps and loop-holes in our present knowledge are pointed out. The authors have indicated what new avenues of investigation might profitably be opened in the future.

In the case of moot questions, they have attempted to present the experimental data, and to discuss the viewpoints of the various investigators, open-mindedly. Every effort has been made to show that the chemistry of wood is a live and rapidly growing field of investigation and that researches in this field are of fundamental importance to biology and to industry.

"The Chemistry of Wood" is published by the Chemical Catalog Company, Inc., of 19-25 East 24th street, New York, and the price of the book is $6 net.

Pulverized Coal Saves Costs at Three Rivers

Adoption of pulverized coal-burning equipment at International Paper Co.'s Three Rivers mill has reduced steam plant operating costs to less than 60 per cent of the same costs a year, according to President A. R. Graustein. The steam is used for heating and drying purposes and, next to wood, is one of the largest items of costs in the manufacture of news print. Power for operating the mill is from hydro-electric sources. Expansion at Three Rivers, more than doubling the capacity to a present figure represents a cash cost of more than $20,000,000 and makes this mill considerably the largest in the world.

Oregon Pulp & Paper Co. Expands Plant

The Oregon Pulp and Paper Company, Salem, Ore., is increasing its capacity of sulphite, bleached and unbleached, to about 250,000 lbs. a day and has added one more paper machine and rearranged its mill to insure a production of paper of 225,000 lbs. per day.

The company also is installing the necessary facilities such as steam turbines and boilers and expects to be in operation during the early part of the year.

R. S. Kellogg Speaks at Baltimore

BALTIMORE, Md., October 27, 1926.—"With newspaper advertising setting new high records and news print paper consumption nearing fifty-seven pounds per capita in 1926, the total use of news print in the United States will approximate three and a half million tons this year," stated R. S. Kellogg, Secretary of the News Print Service Bureau, at the weekly luncheon of the Baltimore Advertising Club today. "Those who know best estimate that the total volume of newspaper advertising this year will be at least $800,000,000, and there is a steadily increasing use of the printed page to link up the producers and consumers of the multitude of products required by a rising standard of living. Newspaper sizes and circulations continue to grow, the newspaper reader is getting more for his two or three cents than ever before, and the daily newspaper habit is firmly fixed. For these reasons it is not surprising that the United States uses nearly three-fifths of all the news print paper used in the world.

"This is an age of speed in production and distribution and only through back sights do we realize how fast we are moving today. Benjamin Franklin, as Postmaster General of the Colonies, listed twenty-five newspapers in America in 1771, and the Declaration of Independence in Philadelphia five years later did not find its first reprinting in Hartford, Ct., until eleven days after adoption. Now the circulation of the more than two thousand English-language dailies in the United States exceeds 24,000,000 copies on Sundays and 34,000,000 on week days, while a photograph taken in Europe in the morning is reproduced here in the afternoon.

"The application of power and invention to the satisfaction of human needs and desires has only just begun," said Mr. Kellogg. "Developments to come far exceed those which have already occurred. Centuries of progress are ahead for this old world. Paper has made universal education possible, and some way will always be found to produce the paper needed, despite the talk about shortages and substitutes. Most of the paper we use is made from wood, and if the land in this country which is fit for no other purpose is kept growing timber, we shall always have wood enough for every essential purpose."

Kalamazoo Cost Division Meets

KALAMAZOO, Mich., October 25, 1926.—A meeting of the Kalamazoo Local Division of the Cost Association of the Paper Industry was held at the Columbia Hotel, on Wednesday, October 20, 1926, at which twenty-seven sat down to the dinner served at 6:30 p. m.

An address of welcome was given by W. J. Lawrence, of the Western Paper Makers Chemical Company, also by Mr. Turner, whose subject was "Rosin Production."

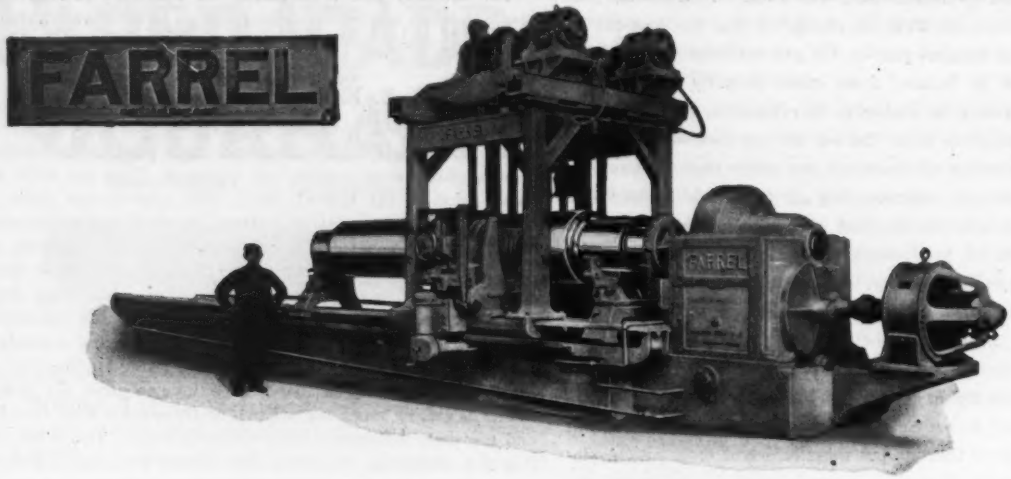
Mr. Charles Mueller also spoke on "Mill Problems," and Mr. Arthur Dreshfield on "Standard Costs."

This division will hold regular meetings during the next six months, and both non-member as well as member mills are invited to send representatives to these meetings.

The local secretary is Harry C. Bradford of the Rex Paper Company, Kalamazoo, Mich., to whom requests for details should be forwarded.

News Print to Remain at $65

MONTREAL, Que., October 25, 1926.—Leading news print interests, meeting in Montreal, have decided that there is nothing to warrant any change in the price of $65 per ton which has prevailed since the beginning of the present year. The industry will in consequence go forward with that price as the basis for 1927.



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Section of the

Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W. G. MacNAUGHTON, Secretary

Jordan Fillings, Beater Flybars and Bedplates

Special Inquiry No. 58

Although the jordan and beater roll bars and beater bedplates used in America, are largely of steel as furnished by the machine or knife manufacturer, without reference to the composition or the hardness test, an increasing number of paper mills making book and writing paper are coming to use the non-ferrous alloys such as phosphor, manganese or aluminum bronze as well as manganese steel and stainless steel.

This special inquiry is made to develop a discussion of the results found in using the special alloys instead of steel for jordan fillings, beater roll flybars and bedplates.

In the responses complete information, with definite data, should be given on each point in the following outline so that the replies may be on a uniform basis.

A. Kind of stock treated.
B. Grade of paper made.
C. Hours in the beater.
D. *Jordan Fillings:*
   1. Material.
   2. Composition.
   3. Hardness—Brinnell.
   4. Maker.
   5. Cost per pound.
   6. Thickness and width.
   7. Arrangement of bars in filling (sketch).
   8. Life of filling.
   9. Depth in inches worn during life.
E. *Beater Roll Bars:*
   1. Material.
   2. Compostion.
   3. Hardness—Brinnell.
   4. Maker.
   5. Cost per pound.
   6. Thickness and width.
   7. Spacing.
   8. Average beating time.
   9. Average life.
   10. Depth worn during life in inches.
F. *Bedplates:*
   1. Material.
   2. Composition.
   3. Hardness—Brinnell.
   4. Maker.
   5. Cost per pound.
   6. Thickness and width.
   7. Arrangement of bars (sketch).
   8. Average beating time.
   9. Average life.
   10. Depth worn during life in inches.
G. *Remarks:*

In discussing the wear of the fillings or bedplates indicate if there is corrosion or pitting where it takes place, if a feather edge is produced, if they are worn smooth and evenly or if they are grooved by mechanical abrasion.

Also discuss the comparative costs taking their life into consideration.

This inquiry is being handled under the TAPPI Service to Members Plan. A copy of the responses transcribed in blank will be sent to all who contribute to the discussion of the question.

Respond to W. G. MacNAUGHTON, Secretary, TAPPI,
October 20, 1926. 18 East 41st Street, New York.

W. H. Swanson Goes With Champion Fibre Co.

[FROM OUR REGULAR CORRESPONDENT]

MADISON, Wis., October 25, 1926.—W. H. Swanson, of the pulp and paper staff of the U. S. Forest Products Laboratory here, resigned October 18 to accept a position on the research staff of the Champion Fibre Company of Canton, N. C. Mr. Swanson's work at the federal laboratory consisted mostly of investigations of the sulphite pulping process and he will be in charge of the southern company's research along the same lines. During the course of his investigations at the Forest Service Laboratory he was joint author with R. N. Miller of a series of papers titled, "The Chemistry of the Sulphite Process."

Mr. Swanson, who is a graduate of the Forestry Division of the University of Minnesota, came to the Forest Products Laboratory from the General Motors Company in 1920. He will join the Champion Fibre Company's staff about November 1.

I. P. To Vote on $25,000,000 Bonds

Stockholders of International Paper Company will meet on October 28 to vote on proposed authorization of $25,000,000 6 per cent fifteen year convertible debentures to provide funds for past and future expenditures under the development program. Bonds will be convertible par for par into 7 per cent preferred stock and in the event of conversion within two years, holders will have the privilege of subscribing for one share of common stock for each $1,000 debenture held, at $50 per share. Stockholders will also vote on proposed increase in authorized 7 per cent preferred stock to 1,000,000 shares from 750,000 shares and increase in authorized common to 1,000,000 no par shares from 750,000 shares. No issue of the newly authorized stock is planned at the present time. The New York Stock Exchange has received notice of the proposed increase in authorized stock.

The Ramar Pulping Processes

A Review of the Canadian Patents

It has been known for some time past that the Union Bag and Paper Corporation has been carrying on experiments with a new pulping process, known as the "Ramar" process from its inventor, R. A. Marr. This process has been tried on a laboratory scale, and is said to be quite revolutionary if the small-scale results are borne out when it is put on a commercial scale. It is understood that the process is a distinct success experimentally for the reduction of both hard and soft woods as well as grass materials, such as reeds, bamboos and straws, and that a much higher yield of pulp is obtained than by the processes at present in use and at a much lower cost, also that the paper made from this pulp is as strong as, or stronger than kraft paper.

As far as we are aware the company have not divulged anything definite about the process, and the first authoritative information to be made public is to be found in Canadian patents 260,719 to 260,728, which were granted to R. A. Marr on May 11, 1926.

The process is based on the following principle: By cooking vegetable material under suitable conditions with neutral chemicals the intercellular binding material (distinct from the lignin which the inventor considers as forming a sheath surrounding the individual fibers) is converted into a readily friable, but insoluble, condition. By suitable mechanical treatment the binder is disintegrated so that it can pass through the meshes of a relatively fine wire cloth, leaving the individual fibers free and unbroken. The mechanical treatment which Marr recommends as the most efficient consists in passing the cooked material between rolls, then through a shredder or pulper, and finally beating in an ordinary beater with which can be associated a washing drum to remove the finely-divided binding material.

According to the inventor, yields of over 95 per cent of pulp, on the oven-dry weight of the raw material, can be obtained when all the binding material is left in the pulp; while if it is removed the yield will be about 10 per cent less. Moreover, as the fibers are in no way impaired, an exceptionally strong paper can be prepared, as strong as, and even stronger than, the best quality of kraft paper. The cheapness of the process is another point in its favor, and is still further enhanced by the fact that the digesting liquors can be used repeatedly, and no elaborate recovery plant is necessary as in present-day alkaline processes.

Marr also mentions in some of his patents, though he does not stress the point, that the pulp can be bleached if desired. In view of the fact that he specifically states that even the thoroughly-washed pulp contains a large proportion of the lignin originally present in the raw material, it appears extremely doubtful that the product can be bleached economically, if at all.

We shall now briefly outline the main features of each patent.

No. 260,719

The essential feature of this patent is the use of a 1 to 4 per cent solution of a nitrate of an alkali metal or of an alkaline-earth metal. The following typical example of the application of the process is one of several given in the specifications.

Blocks of dried spruce, spruce chips containing about 40 per cent of water, and blocks of yellow poplar were introduced into a digester such as used in the usual pulping processes. Sufficient liquor was added to completely cover the wood, and the contents of the digester were heated up to a pressure of about 100 pounds per square inch, which was maintained for one hour. The total time that the pressure was above 80 pounds was considered as the effective cooking period, and in this case amounted to two hours.

After removing from the digester, the material was soaked in cold water for several hours, after which it was run through crushing rolls, then with water through a pulper and into a beater. The beating was commenced with the roll of the beater raised about six turns above the bedplate, and the roll was gradually lowered to about three turns above the bedplate. The beating was continued for half an hour, after which a portion of the pulp was sheeted, and dried without washing. Another portion of the pulp was first washed, being given a light washing with a spray of water, and was then sheeted. Another portion was further beaten for half an hour, at about the end of the beating operation size and alum were added in the amounts commonly used in sizing paper. In other instances portions of the pulp were washed and then sized, after which they were made into sheets.

Other runs were made under somewhat different conditions, and using the same liquor in all cases. The pulps obtained from spruce were of a light buff color, while the poplar pulp was appreciably darker, being a medium brown. All the pulps obtained in these experiments were found to be very strong, similar to the best grades of kraft, the poplar pulp being particularly strong and tough and suitable for very strong wrappings.

A certain dilution of the liquor takes place during cooking owing to the steam that is introduced to heat up the contents of the digester, and it is advisable after each fourth or fifth cook to add a little more nitrate in order to bring the strength back to its original value.

The use of nitrates seems in some respects to be somewhat better than sulphates referred to in Nos. 260,721, 260,722, 260,723 and 260,725, and also seems to be somewhat better than sodium chloride referred to in No. 260,720. From the same wood, the pulp produced when nitrate solution is used seems to be somewhat tougher and stronger than when a common salt liquor is used.

No. 260,720

According to this patent the material may be cooked with solutions of "the salts of the alkali-forming metals, sodium, potassium, magnesium, and the like, those salts which do not have reducing (i.e., deoxidizing) action being found to be particularly suitable, and of such salts I mention sodium nitrate and especially sodium chloride." Owing to its cheapness and availability, sodium chloride is preferred, particularly as it does not have to be of a high degree of purity and in its crudest forms, such as rock salt or sea salt, it gives very satisfactory results. Even sea water, either as such or after addition of a small amount of common salt, can be used.

The optimum cooking pressure is from 80 to 110 pounds per square inch, and should be maintained for from about one to three hours. The temperature should preferably not be allowed to go as high as that corresponding to a pressure of 120 pounds at any stage during the cooking, and in no case should it be allowed to go appreciably above this point as the material is liable to be injured.

The usual size of chips may be used, but the wood may also, if desired, be in much larger pieces, up to 3 inches long (in the direction of the grain) and half an inch or up to an inch square.

In most cases the presence of a certain proportion of sulphates, though not essential, has a beneficial effect on the results.

Green wood seems to give a somewhat stronger pulp than dried wood.

No. 260,721

This patent is not concerned with any pulping process, but with the pulp obtained by cooking vegetable materials, including both hard and soft woods, cane, bamboos, sedges, straw, etc., with relatively weak solutions of neutral salts, followed by soaking in water and appropriate mechanical treatment as outlined above, with or without washing.

The final product obtained without washing is referred to as "plastic wood" or "plastic plant growth," and consists of sub-

stantially all of the original raw material with the exception of the water soluble constituents. During the beating operation the individual fibers are entirely separated, as shown by the fact that the material is free from shives, and it has retained, in addition to the "fibro-cellulose," practically the whole of the lignin, this latter being in the form of a sheath or coating surrounding each individual fiber. The product also contains practically the whole of the "intercellular cementitious material," the latter having been converted into a finely-divided pulverulent state, but none of it having been dissolved out, though some of it is somewhat hydrolyzed during the beating to form a "colloidal suspension-solution." It should be noted that this partially hydrolyzed material is not sufficiently sticky to prevent the pulp from working free on the paper machine wire, whether sizing material has been added or not.

No. 260,722

This patent broadly covers the use of sulphates of metals having an atomic weight of from 52 to 65.4, and more particularly of copper and of iron (both ferrous and ferric) sulphates, which may be used either singly or in admixture. Without limiting himself to any specific theory, the inventor considers it probable that the sulphur of the sulphate reacts with the tannin and with some of the connective tissue of the wood to form colloidal products somewhat similar to the sulpho-tannins. The waste liquor which is obtained after the sulphate content has been largely exhausted by repeated use has a relatively high content of colloidal substances possessing tanning properties; and it can be used in the tanning industry.

Digestion of wood containing a relatively large amount of tannin, such as extracted chestnut wood, with iron sulphate solution produces a black pulp which is quite suitable for making black paper directly without addition of coloring matter.

No. 260,723

The present invention is based on the use of a soluble sulphate of an alkali metal (i.e., alkali or magnesium sulphate) as the principal constituent of the digesting liquor. They can be used either alone or in conjunction with other sulphates.

Magnesium sulphate, alone or with alkali metal sulphates, as well as zinc sulphate with alkali metal sulphates, appear to give better results with grasses, bamboo, etc., than with resinous woods. Both of these give good results with the non-resinous woods. Sodium sulphate, alone or mixed with metal sulphates, seems to give better results with fir, spruce and hard woods. Potassium sulphate, alone or mixed with metal sulphates, seems to give better results with grasses, straw, bamboo, various stalks and marsh growths. The latter apparently respond better to treatment with magnesium sulphate either alone or in admixture with alkali sulphate.

Aluminium sulphate, either alone or mixed with alkali sulphates, reduced all plant growths well, but, particularly with some of the woods, seems to harden the fibers to some extent. Tests also have shown that chromium sulphate gives somewhat darker-colored wood fibers and it also colors some of the individual fibers from other growths. The color can be controlled to some extent by the strength of the solution.

In digesting wood it is sometimes advantageous to use sodium sulphate alone rather than other sulphates or mixtures of sodium sulphate with others, as when cooking with sodium sulphate, especially during the first four or five cooks with such solutions, a somewhat lighter colored pulp is produced and the fibers mat and felt well.

With any or all of these reagents the wood can be cooked either barked or unbarked, as desired.

When grasses and the like are treated with magnesium sulphate it is advisable to use a certain proportion of potassium sulphate (say about 8 to 12 per cent of the weight of the magnesium sulphate), which tends to keep the silica in suspension and prevents the formation of gelatinous silica. With woods, and especially resinous woods, it is advisable to add about this proportion of sodium sulphate.

In a number of examples which are given in the specifications, the inventor obtained very strong papers having bursting strengths (Mullen) varying from 20 pounds for a sheet 0.0022 inch thick to 500 pounds for a sheet 0.2 inch thick.

No. 260,724

The solution in this case contains kainit, $K_2SO_4 \cdot MgSO_4 \cdot MgCl_2 \cdot 6H_2O$, as its active ingredient. This material has been used for a long time as a potash fertilizer, and usually contains from 12 to 15 per cent of potash (K_2O). It is best used at a concentration of 1.2 to 4 per cent, preferably about 2.4 per cent. As with the other solutions mentioned the cooking liquor can be used repeatedly, and it may contain other sulphates besides the kainit.

After using a few times it is advisable to purify the solution, which can conveniently be carried out by boiling for an hour or two with 1 per cent of sulphuric acid and then neutralizing with an alkali or an alkaline salt. Alternatively, it can be evaporated to dryness and used as fertilizer.

No. 260,725

This patent is concerned only with the treatment of cane material, including bamboos. It is cooked with a 1 to 1.5 per cent solution of a mixture of 1 part of zinc sulphate, one part of potassium sulphate and two parts of sodium sulphate. The time and temperature of cooking determine the degree to which the material is modified. For making fiber materials for stiff brushes the liquor is heated to a pressure of about 75 pounds, which is maintained for 15 to 20 minutes; for making materials for spinning fibers, burlap, gunny cloth, rope, twine and cordage, it is advisable to hold a pressure of 100 pounds for 30 minutes or so; for making finer cloth a pressure of 100 pounds is maintained for 30 to 40 minutes; and for making pulp for use in the manufacture of paper or plastic materials, the material is best heated to a pressure of 140 pounds, and kept at this pressure one and a half to three hours.

The subsequent treatment in the preparation of paper pulp consists, as in the other cases, in soaking in water, passing between rolls, through a pulper and through a jordan. In place of using the jordan an ordinary beater can be used, if desired, but this ordinarily is not necessary.

No. 260,726

A suitable quantity of stock is placed in a box-shaped sieve, with vertical sides and a bottom composed of fine wire screen, say about 70 mesh, over which may be placed a coarse fabric before introducing the pulp if desired. Suction is applied below the box, which is shaken at the same time to produce felting of the fibers. A felt is then placed on top of the pulp, the sides of the box are lifted off, and the bottom of the box is inverted on a suitable table or bench. The soft sheet, with a felt on either side, is wrapped in a fine-mesh wire, placed on a rigid perforated tray, covered with a board, or the like, and pressed heavily to remove as much water as possible. The pressed board is then placed between perforated rigid plates which are clamped together and run through a drying oven.

If desired any suitable waterproofing agent may be applied to the board before drying, or the dried board may be dipped in a waterproofing solution and again dried between the perforated plates. A suitable covering such as paper may then be glued upon one or both sides of the board in the usual manner.

The inventor claims that the board produced in this manner is more uniform and appreciably stronger than boards made according to any prior process with which he is familiar.

No. 260,727

The object of the invention is to produce a leather substitute which has the useful properties of leather rather than all its outward appearances. The base of the leather substitute is wood fiber, preferably made from hard woods such as hickory, nut tree woods, maple, birch, beech, oak, holly, dogwood, by the processes described in patents 260,720, 260,722, 260,723 and 260,724.

The material is preferably washed during the beating operation in order wholly or partially to remove the intercellular binding material, and it is beaten for about an hour at a roll speed of about 1,000 to 1,200 feet per minute. Towards the end of the beating the stock is sized with the usual sizing agents, and addition of a small proportion of rubber latex at the same time as the rosin renders the finished product waterproof. Instead of latex, or in addition to it, emulsions of heavy oils, asphaltic oils, asphalt, etc., can be used. The size is precipitated with alum in the usual way.

The pulp is then run on to a paper machine; and if desired it may be formed into a sheet on a fabric to which it will adhere, though this is by no means necessary and satisfactory products can be made without the fabric backing. When latex has been used, the sheet can be vulcanized.

No. 260,728

This patent provides for the recovery and utilization of the finely-divided intercellular binding material removed during the washing operation carried on simultaneously with the beating.

On allowing the wash water to stand, the binding material settles out and can be recovered either by decantation or by filtering through a very fine screen or in a filter press. It contains the air duct and "tylose" systems of the plants, and is reduced to extreme fineness, without being rendered soluble, by the mechanical treatment to which the cooked material is subjected.

The material recovered in this way, while still moist (say of the consistency of mortar or putty) can be molded and pressed into any desired shape, with or without the addition of fillers, waterproofing agents or dyes. Even when no waterproofing agents are added, after drying the molded articles are quite resistant to penetration by water and can be soaked for days and months at a time without becoming wet through.—A. P.-C.

Tumwater Paper Mills Order Machinery

The Tumwater Paper Mills, formerly the West Coast Paper company, of Tumwater, Wash., have placed orders for some of the machinery for their newly remodelled building.

A paper machine from the Beloit Iron Works, Beloit, Wis., will have a speed of 700 feet per minute for wrapping papers. It has a width of 134 inches with a removable Fourdrinier, and a patented Aldrich shake. This machine when it goes into operation next May will be the only one of its type on the Pacific coast.

Provision is being made in the plant to permit of expansion, so that three other machines of similar capacity to the initial one may be installed without any necessity of change in arrangement of the building. The capacity at present, as previously stated, will be fifty tons of wrapping paper daily.

For the first few months of operation the mill will produce its own ground wood, according to statements of T. E. Osmund, president of the company. Later machinery for producing sulphite pulp will be installed.

G. A. Macklem, engineer of the Beloit Iron Works, is assisting L. A. DeGuere in designing the plant and in placing the machinery.

To Make Mount Line of Paper Mill Equipment

The Swenson Evaporator Company subsidiary of the Whiting Corporation, Harvey, Ill., has concluded negotiations with W. D. Mount, consulting engineer, Lynchburg, Va., giving it exclusive manufacturing and selling rights in the United States covering the well-known Mount line of paper mill equipment: Continuous causticizing systems, lime recovery plants, rotary vacuum filters, pulp washers, calcining furnaces, molten caustic equipment, caustic flakes, driers. Mr. Mount will act as consulting engineer with offices at 602 Peoples National Bank Building, Lynchburg, Va.

TECHNICAL SECTION, PAGE 148

Large Amount of Sulphite Equipment Installed

The year 1926 has been one of great activity in sulphite mill construction, and judging from the contracts secured by the G. D. Jenssen Company, it equals the great year of 1920. Since January 1 contracts for Jenssen towers have been awarded by the following concerns:—

Algonquin Paper Corporation, Ogdensburg, N. Y., new mill.
Rainier Pulp and Paper Company, Shelton, Wash., new mill.
San Juan Pulp Manufacturing Company, Bellingham, Wash., new mill.
Manitoba Paper Company, Ltd., Pine Falls, Manitoba, new mill.
Thunder Bay Paper Company, Ltd., Port Arthur, Ont., new mill.
Fort William Paper Company, Ltd., Fort William, Ont., new mill.
Canadian International Paper Company, Gatineau, Que., new mill.
St. Anne Power and Paper Company, Ltd., Beaupre, Que., new mill.
Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., addition.
Port Alfred Pulp and Paper Company, Port Alfred, Que., Replacement addition.
Donnacona Paper Company, Ltd., Donnacona, Que., replacement.
Mattagami Pulp and Paper Company, Smooth Rock Falls, Ont., replacement.
Price Brothers & Co., Ltd., Kenogami, Que., replacement.
Oregon Pulp and Paper Company, Salem, Ore., replacement.
Ohvikens A/B, Ohviken, Sweden, replacement.
Nokia A/B, Nokia, Finland, replacement.
Laskela Bruks A/B, Laskela, Finland, replacement.
Union Company, Skien, Norway, replacement.
Tofte Cellulosefabrik A/B, Hurum, Norway, replacement.
Tegefors Werk, Jarpen, Sweden, replacement.

In addition the G. D. Jenssen Company has also sold its spray-type cooler, the Strindlund relief cooler, the Kamyr feltless machine and 14 of the new Thune pulp screens to various mills in Canada and the U. S.

The new sulphite mills under construction represent a daily production of about 700 tons of sulphite pulp which is an increase of about 7 per cent over last year's daily production. This is somewhat higher than usual but really not any higher than could be expected from the immense increase in news print production. If it is true that the paper consumption increases 8 per cent each year the production of sulphite pulp has not been keeping step with that of paper and a further expansion in sulphite production may safely be expected.

As many sulphite manufacturers today are building paper mills to take care of all or part of their production or in some cases are turning to Rayon pulp, it is safe to say that sulphite pulp, far from being a drug on the market, may be expected to hold its own for some time to come.

North Star Strawboard Mills Add Beaters

[FROM OUR REGULAR CORRESPONDENT]

ST. LOUIS, Mo., October 25, 1926.—The North Star Straw Board Mills at Quincy, Ill., are undergoing a series of improvements and the installation of new equipment. Addition to the paper machine and newly developed parts now in successful operation have increased the output to such an extent that additional beater equipment has become necessary. In consequence, two large Dilts new type beating engines will shortly be installed and new pumps added to handle the greater tonnage of stock. James L. Carey of Chicago is the consulting engineer for this mill which seems destined to figure prominently among the best mills of the Middle West.

Hand Made Paper Industry In India

By Tekumalla Venkajee, B. A. Rajahmundry, India

The first authentic record of paper making in India dates from the time of the Emperor Akbar when it is said to have been introduced into the Province of Kashmir. Prior to this, only birch bark and palm leaves were the materials used to write upon, which are known in Sanscrit as "Pathra" and "Bhurja Pathra."

The art of paper making was prevalent in China and Japan and slowly moved from China to the inhabitants of the Himalayas. It is recorded in the eleventh century that a letter was written on what is called paper by King Bhoja of Dhara in the Malva Estate. The way in which the art of paper making was introduced, as recorded by the great historian Alburini, was through Chinese prisoners taken in war. Peterson discovered at Anhilvad Paton, paper manuscripts of 1327 and 1328, the leaves of which were cut according to the size of the palm leaves. It is very doubtful if any of the ancient manuscripts from Caashker, which were written on a peculiar paper covered with a layer of gypsum, were of Indian origin, although Doctor Hoernle believes that all of them were written in Central Asia. During his recent visits to Khatmandu, Pandit Har Prasad Sastry acquired a Sanscrit manuscript belonging to the eleventh century A.D., on Nepal paper.

It may be interesting to mention that paper was made in Nepal, partly from bamboo and partly from the bark of a small, thorny shrub known as Mahadeva's flower (*Daphne cannabina*), the paper surface being made glossy by rubbing with a smooth stone. The Daphne paper is generally very thick and was made still thicker by coating it over with a paste made from the boiled kernel of the tamarind seed, and it was colored yellow on one side with tumeric. The paper thus prepared becomes very hard and looks almost like a piece of leather. A solution of starch made by boiling sunned rice was used for sizing paper, which operation is called in the vernacular "Tulat." Except in the case of correspondence with the outside world, the Nepal government never uses any machine made paper.

The Daphne paper, though commonly known as Nepal paper,

FIG. 1

was mostly made in Bhutan. The Bhutias used also the bark of another plant known locally as "Diah" for paper making, the process being the same as in China and Japan.

As times advanced the papermaking industry died out. In the time of the Peshwas and Maharatas, rag paper of coarse texture was used by the native priests for their religious compositions, by merchants for their accounts, and by military officers for their correspondence. The number of educated persons was small and the production was very restricted and hence the cost of paper was very high. The chief centers of paper making were:

A. Bombay Presidency:
Roje, Ahemadabad, Erandol, Junnar, Nasik, Poona, Beejapoor, Bagalkot, Gokak, Talikot.

B. Bengal Presidency:

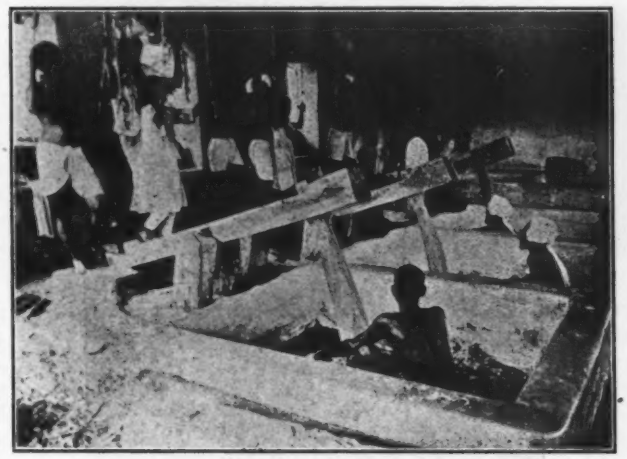

FIG. 2

Hoogly District, Village of Maiah and Uluberia; Murshadabad Division, Village of Kristpur and Sreerampoor.

Class of Paper Makers ("Kagjees")

Paper making has been in the hands of a class of Mahomedans known as "Kagjees" or paper makers (from the Persian word "Kagus" and the locality of paper making known as "Kagji Pith").

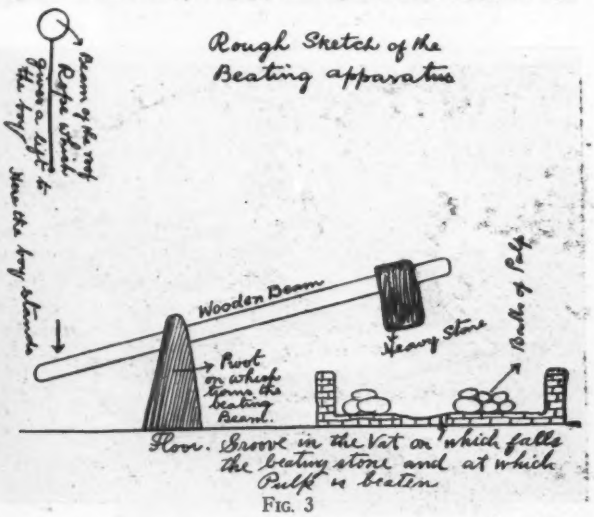
Rough Sketch of the Beating apparatus
Wooden Beam
Heavy Stone
Floor. Groove in the Vat on which falls the beating stone and at which Pulp is beaten

FIG. 3

In the Bombay Gazetteer, Vol. 4, under the heading "Ahamadabad" the following account is given:

"In the year 1848 about 800 boys and men were employed in paper works, while in 1878 only 600 men were employed. Ahmedabad paper was chiefly used in government vernacular registers and in the native states and by native traders whose ways of bookkeeping and bookbinding required tough and close grained paper.

In the early fifties, Erandole Kagad (paper made in Erandole) was very famous and was used in all the neighboring provinces. Farther off, on the banks of Anjani river, was the town called old Kagdipura, its houses fitted with vats and plinths of massive stone and its enormous cement floor laid in the open air by the riverside, where the paper pith was washed and dried. These floors are said

FIG. 4

to be 300 years old and some of them are still in good preservation."

According to the local legend, paper making was introduced into Nasik at a later date, about 1800 A.D., by one Balaji Abbajee, who brought a colony of Musalman Kagdis from Roje in Aurangabad and set up Naski's first paper factory, which in 1883 was in possession of Balaji's grandson. Fifty factories were established to the northeast of the town, which was then called Kagdipura, which gradually became extinct. At the same time one Allibhai was said to have brought a colony from Junar and started a factory in Poona. Here again this movement slowly decayed as soon as the support of the Peshwas of the Kagdis (by giving the lands free of charge for buildings and workshops) was withdrawn.

FIG. 5

In a village, Kondapalli, near Bezwada, this art is still followed in a family or two which still cling to the ancestral craft although others have taken up weaving and other trades.

This hand made paper is of two classes, that made chiefly from

FIG. 6

old gunny sacks and jute and that remade from old waste paper. Out of these the following kinds of paper (the names of the papers are in the vernacular of the provinces and somewhat parallel the present day nomenclature—White writings, thick and thin account papers):

1. Dolatabadi
2. Sahebkhani
3. Nana Khambati
4. Nana Murasi
5. Vala or Gajia

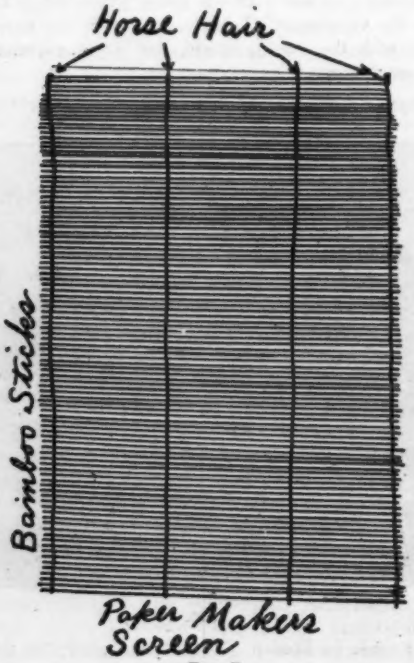

FIG. 7

The differences are mainly in sizes, the material being the same in all cases.

This nomenclature of papers is rather peculiar although the principle followed is the same as that of today on the Continent.

1. A bundle of 2 dozen sheets is called a Ghaw Dista (a quire).

2. 100 distas are made of 10 Bengal Maunds of jute, each maund of jute costing Rs. 2/—(66 cents), which makes the cost of the material in the paper (without labor charges, etc.) equal to 6 (approximately) per 100 quires of this paper.

FIG. 8

The beater man in this art is called a "Lukkar" and his wages were 8 cents a day. The duty of Lukkars was to wash the pulp in the river from 9 A. M. to 6 P. M. The paper makers, the operators of screen and frame, were paid by piece work at the rate of 40 cents for 25 quires of paper. The output of one set of paper makers was ten to twelve quires a day.

Sirghars and Morkhus (to size and polish the paper) are also paid by piece work at the rate of $3 per hundred quires, according to the size and polish of the papers.

Manufacture

There is a legendary song sung even now in the hill tribes which gives a detailed description of pulp and paper making. The song was perhaps the first and last part of the training in this art, to be committed to memory.

The Song

The process in the song is as follows:

FIG. 10

1. Fragments of worn out gunny sacks or of *san* were cut into small pieces, moistened and pounded under the *dhegis* (the people who cut the raw material into pieces are called "Saggars").
2. Taken to the river and washed.
3. Mixed with slaked lime and left wet for eight days.
4. Pounded again and washed.
5. Mixed with carbonate of soda (*Khar*).
6. Washed ten or fifteen times till quite white.
7. Brought home from the river and mixed with country soap.
8. Spread in heaps in the sun to dry.

FIG. 9

9. Collected and rubbed by hand on a smooth plinth (*gar*), set in one corner of each Chabutra, to separate the fibers thoroughly.
10. Pounded again and thrown into water in cisterns whence it can be taken out as sheets on the screen.

Process

The raw material is stored and cut into small pieces of about ¼ x ½ inch and then taken down to the river in baskets and washed thoroughly to separate the fibers. When all the fiber is thus separated the stuff is taken to a place where are constructed tanks with lime and mortar. These tanks are called "Chabutras"

FIG. 11

as shown in Fig. 1, where the stuff can be seen being put into the tanks, and slaked lime $CA(OH)_2$ is added to the stuff in a proportion of 2/5 the lot of the raw materials. Here the stuff is allowed to soak for a period of seven to ten days and sometimes even a shorter period of four days. This process of soaking in lime resembles the process of cooking with caustic soda in the

modern mill. After this soaking, when it is found to be sufficiently softened, the stuff is removed into a "Dhenki." This Dhenki is very much like that used for husking paddy, only somewhat larger and heavier and the head of the pestle is more strongly bound with iron. The stone mortar is only slightly grooved and consists of a large piece of basaltic stone about 3 feet long, 1½ feet broad and 1 foot high, as can be seen in Fig. 2 where three Dhenkies are at work, and Fig. 3. The boys stand on the farther end of the long horizontal wooden beam supported by a pivot like a fulcrum. When the pestle fixed to the near end of it is raised, and the boys catch hold of the rope hanging near them, the pestle is let down and beats the pulp. This process is continued with great rapidity. The man who sits near it in the mortar feeds the pulp to be thus beaten or thrashed. The pulp thus produced, after pounding with the Dhenki, is next kneaded thoroughly in another vat by trampling under foot like potter's clay. This is again taken down to the river to be washed as in Fig. 4 where the two men have tied to their loins a large piece of cloth into which the pulp is thrown and then agitated and washed by hand. It is then brought back and mixed with "Sajikhar," a black mineral chiefly carbonate of soda, and quicklime in the proportion of:

Pulp	8 parts by weight
Sajikhar	1 part by weight
Quicklime	1 part by weight

The mixture is allowed sufficient water to cover it and is left to soak for fifteen days until it is quite white. When sufficiently soaked it is again taken to the river and washed with country soap, obtained from a vegetable oil, and then brought back and again beaten. This washing and beating is repeated five or six times at intervals of four or five days, until the mass is absolutely white and thoroughly broken. The quantity of soap used at each washing is one-eighth of the weight of the pulp. Pulp made from waste paper is similarly beaten and washed five or six times and is then mixed with the pulp that is made from jute or other raw material. The mixture is again beaten for two days in water, by which time it is reduced to what looks like a thin gruel. This liquid is allowed to settle, the water is drawn off and the sediment is removed to be washed once more in the river. Next it is brought to the houses of the paper makers, put into cement vats about six feet square and four feet deep, stirred carefully in water and allowed to settle all night.

Next morning the paper maker takes a wood frame (Sacha)

FIG. 12

about 4 x 3 feet, rectangular in shape, with six or eight crossbars over which is stretched a fine screen (Chapri) of grass stalk (Mir) sewn together with horsehair about 1 inch apart, as in Fig. 7, and kept in place by a stick made to fit in both hands at each side as shown in Fig. 5. These sticks are used to stir up the liquid and then replaced. The paper maker leans over the vat, takes the frame carrying the screen in both hands, dips it into the water as in Fig. 6, and draws the screen, which acts as a sieve, slowly and evenly to the top, and cunningly manipulates it so that a uniform sheet of pulp is left upon the screen as it emerges from the water to drain off as in Fig. 8. He then holds it for a moment for the water to drain off as in Fig. 9. If a thicker paper is required two layers are taken or even more. The workman, having removed

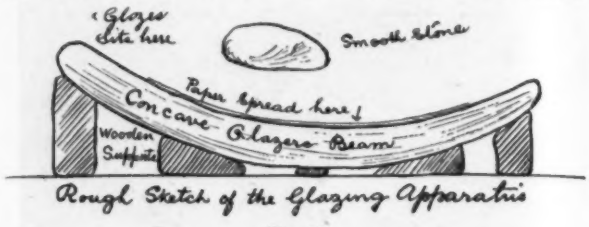

FIG. 13

the screen from the frame and drained it, inverts it on a flat board with the paper face downward, and rolls the screen up, leaving the wet sheet behind as in Fig. 10. The next sheet is put over this and the process is repeated until 24 sheets are rolled off on the board. Another board is then placed on the pile and loaded with a heavy weight to squeeze out the water. To complete the drying each sheet is carefully skimmed off the pile and pasted separately on the chunam-covered wall, usually by women (generally the wives of the paper makers). Here it is left to dry until it peels off of its own accord as in Fig. 11.

When dry the sheets are cut into uniform size and then this rough paper is sized. The size is generally made of finely grained wheat flour bottled in water. After one side is sized the sheet is hung on a string to dry before the other side can be treated. Then the second side is sized. For this the paper is spread over a concave glazer's beam, a piece of woolen rag is dipped into the size and then rubbed on the paper and afterwards the rubbed paper is polished with an egg-like stone to impart gloss, as can be seen in Fig. 12, the details of which are shown in Fig. 13, where one man is rubbing the paper and beside him can be seen a huge pile of papers thus prepared.

After the sheets have been dried they are exposed to the night dew to soften them slightly, and the next morning they are prssed on a piece of plank with the help of a piece of smooth stone or a conch shell. This, too, is generally done by women. The paper is now ready for use.

Thus, with the crudest of implements, the longest of time taken for the manufacture, and the great labor used for it, the hand made paper is made ready. Consequently the cost is very high as can be seen from the following:

1. Bara Rukhi (small sized paper, the width being 12 fingers laid side by side, i.e., about 8 to 9 inches), 36 quires per dollar.
2. Sola Rukhi or Jangri (width being 16 fingers laid side by side), 15 quires per dollar.
3. Biara (used in state offices), 27 quires per dollar.

Baleswari, white or blue (a thick paper made at Anta, Howrah District), 6 quires per dollar.

This hand made paper industry cannot stand its competition with machine made paper for several reasons:

The uneven polish.

Rough surface.

Unsuitability for common and speedy writing.

Even imagining that there is state aid for such an industry, it cannot long continue unless the process be modernized as is done here and there in England and Europe, where very tough and superior paper is required for documents, currency, paper, etc.

In some places in Japan and China the hand made paper industry is said to be still in existence, but in spite of all the love for an ancestral craft this paper has no economical basis and it is in no way profitable unless it be purchased as an oriental curio from patriotic motives.

Stipa Ichu Grass as a Paper Making Material*

By Merle B. Shaw, Paper Technologist, George W. Bicking, Paper Maker,
Bureau of Standards

Grasses as a rule seem to offer little possibility as a source of papermaking fiber for fine papers. *Stipa ichu* grass has not proved an exception but it was thought desirable to present the data obtained in recent tests as of possible interest to those engaged in paper manufacture. The tests made were limited to laboratory scale production and included only two cooks but the results obtained are considered indicative of the value of stipa ichu as a papermaking material.

Source and General Description of Stipa Ichu

Stipa is one of the larger genera of the grass family. The species of this genus are found in the temperate regions of the world and are especially characteristic of arid and semi-arid regions. One species, *tenacissima,* is the esparto used in the manufacture of paper and cordage. The species *ichu* was the material employed in the papermaking tests described herein.

Stipa ichu is distributed from the dry hills and plateaus of Mexico southward through the Andes to Argentina but is nearly absent from Central America. In South America it is especially abundant at altitudes of 8,000 to 14,000 feet, and in many parts of the Andes is a dominant grass above the timber line. It is a hard, fibrous bunch grass with erect involute blades and is from one to three feet high. In the Andes it is commonly known as "ichu."[1]

The material used in the tests consisted of the stems and leaves of the plant and was submitted by the Ecuador Legation, Washington, D. C., with request for information as to its suitability for papermaking.

Testing Methods

Equipment

The grass was cooked in a laboratory rotary boiler, such boiler having previously been found to give excellent results as regards laboratory scale pulping experiments. The reader is referred to a previously published article for complete description and photograph of the boiler employed.[2] In the preparation of the stock and its subsequent conversion into paper a ½ pound beater and a sheet mold were used. The sheet mold, which was made at the Bureau of Standards, is fully described and illustrated in an earlier issue of this journal.[3]

Cooking Procedure

The grass was cut into pieces about one inch in length and charged into the cooker. Two cooks were made, one employing 25 per cent of caustic soda, based on the weight of the air-dried grass, the other using 25 per cent of lime. The cooking conditions were:

Caustic Cook

Weight of air-dried grass	1.5 lb.
Cooking temperature	325-345° F.
Cooking pressure	110-150 lb.
Time for raising temperature	¼ hr.
Time of cooking at temperature	4¼ hr.
Time of cooling	The stock was allowed to stand overnight and to cool gradually.

Lime Cook

Weight of air-dried grass	1.5 lb.
Cooking temperature	325-340° F.
Cooking pressure	115-130 lb.
Time for raising temperature	1 hr.
Time of cooking at temperature	6½ hr.
Time of cooling	The stock was allowed to stand overnight and to cool gradually.

Papermaking Tests

The general method employed to secure uniform sheets on the sheet mold has previously been fully described[3] but the essential features of the procedure followed in the tests, briefly stated, were as follows:

Wet pulp was taken from the cooked and washed material and diluted, preparatory to beating. The beating consisted of only brushing out the fibers until there were no lumps or knots. No attempt was made to obtain maximum strength of fibers. After the beating was completed the pulp was removed from the beater and further diluted. It was then thoroughly mixed and a sample taken therefrom for each sheet made.

The weight of cooked pulp taken and the degree of dilution employed are constant for all sheets. The sample of beaten pulp is such that the sheet made will be approximately standard basic weight, 60 pounds per 500 sheets 25 by 40 inches in size, the exact weight depending on the shrinkage of the sheet. Direct comparison of the sheets from the mold can, therefore, be made.

A beater of papermaking stock was prepared from each of the cooks. The sheets made were submitted to the various physical tests applied in evaluation of the paper.

Test Results

Yield

The yield of unbleached papermaking pulp was 25.5 per cent for the caustic process; 56.8 per cent for the lime. These values represent percentages, by weight, of bone-dry pulp based on air-dried grass.

Bleaching

A bleaching test was made on a sample of the pulp from the caustic cook (pulp from lime cook not sufficiently refined for bleaching). Bleaching powder, calcium hypochlorite, was the oxidizing agent employed to whiten and purify the fibers. The results obtained by using 12 per cent of bleaching powder were not satisfactory, the pulp being insufficiently bleached and the sheet made therefrom being of yellowish color and containing a number of shives. Larger amounts of bleach were not tried since the use of such quantities is not considered commercially practical.

Test Data on Paper Made

The paper made was soft and of good bulk. Data on other physical properties of the paper are given below and are on the waterleaf sheet (paper without the addition of sizing to render resistant to moisture). Similar measurements on soda wood and esparto pulps are included for comparative purposes.

Material	Weight, 25 x 40—500	Bursting strength	100 times the ratio of bursting strength to weight, 25 x 40—500	Tensile strength		Tearing strength	
				Long direction	Short direction	Long direction	Short direction
	lb.	pt.		Grams	Grams	Grams	Grams
Ichu pulp—							
Caustic cook	60	12.1	20.2	2220	2158	27.8	27.2
Lime cook	60	5.7	9.5	925	895	39.8	42.8
Soda wood pulp	60	12.3	20.5	1438	1520	36.6	38.5
Esparto pulp	60	14.5	24.1	2100	2260	52.7	52.5

Discussion

To be conclusive the results obtained need to be confirmed by papermachine tests (not made because of insufficient amount of material) but the laboratory tests indicate the following:

The yield of papermaking fiber from *stipa ichu* grass prepared by the caustic soda process does not compare favorably with that of the commonly used papermaking materials. The lime process

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* Published by permission of the Director of the National Bureau of Standards of the U. S. Department of Commerce.

[1] The botanical information included was obtained from Contributions from the United States National Herbarium, Vol. 24, Part 7, and from the author of that publication, A. S. Hitchcock, botanist in charge of systematic agrostology, United States Department of Agriculture, Washington, D. C.

[2] "Caroa Fiber as a Paper-making Material," by Merle B. Shaw and Raymond R. Rumsey; Paper Trade Journal, Vol. 80, No. 2, pp. 47-49, Jan. 8, 1925. Tech. Assoc. Papers series 8 (1925), pp. 107-109.

[3] "Method of Making Uniform Fiber Sheets for Test Purposes," by Merle B. Shaw and George W. Bicking; Paper Trade Journal, Vol. 79, No. 21, pp. 51-53, Nov. 20, 1924.

JOIN TAPPI

The younger chemists and engineers in particular should join the Association that has now as members most of the leading paper technologists and engineers of North America as well as many abroad.

The entrance fee and yearly dues are very moderate and in many instances the members receive in direct service more than the amount of dues.

Those elected now become members and begin to receive service on payment of 1927 dues in addition to the entrance fee.

Secretary TAPPI,
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gives a satisfactory yield but the bursting and tensile strengths of the paper are insufficient to meet the usual requirements.

The pulp contains many shives and is difficult to bleach. To have removed the shives in the above tests would have required the use of a greater amount of digesting material and the yield of pulp obtained would have been proportionally lower.

On account of low yield, high chemical consumption and lack of strength, ichu grass is not considered a promising papermaking material. It is more fitted for admixture with other pulps than to be manufactured into paper by itself. It gives a soft and bulky sheet and, under favorable economic conditions, would doubtless be suitable for use as filler with pulps of higher fiber strength.

Rainier Paper Co. Offers Bonds

PORTLAND, Ore., October 16, 1926.—The Rainier Pulp and Paper Company is offering an issue of $1,300,000 First Mortgage Sinking Fund Gold Bonds, known as the 7 per cent series of 1941. The bonds are dated September 1, 1926, and are due September 1, 1941.

The company was organized to manufacture sulphite pulp at Shelton, Wash. There are approximately 16 acres of tidewater land owned by this corporation. It is on this site that construction work is now under way on a plant which will have a daily capacity of 130 tons of unbleached sulphite or 110 tons of bleached sulphite. All the buildings of this plant are of reinforced concrete, and machinery installations are to be of the latest, according to E. M. Mills of the company.

Adjoining this paper plant are the Simpson Logging Company and the McCleary Lumber Company, from which the Rainier Pulp and Paper plant has contracted to purchase electric energy and steam at low rates. The wood supply will also be available from nearby lumber mills for at least twenty years.

With these contracts estimated and those of others for the principal raw materials used in manufacture, together with a general knowledge of market conditions, earnings can be rather definitely forecast. It is estimated that the earnings from the present plant before bond interest, should be approximately $500,000 per annum, or equivalent to about five and one-half times interest requirements on these bonds.

The Rainier Pulp and Paper Company is authorized to issue additional bonds up to $3,700,000, in series, the amounts representing not to exceed 60 per cent of the actual and reasonable cost of new properties or extensions as defined in the Trust Indenture, provided, however, net earnings, after all charges, including taxes and depreciation, for a period of twelve months preceding the date when such bonds are proposed to be issued, shall have been equivalent to not less than 2½ times the amount necessary to pay the annual interest on all bonds outstanding and those proposed to be outstanding.

The management of the Rainier Pulp and Paper Company is vested in men of long experience in the paper industry. More than 50 per cent of the preferred and common stock is owned by Isadore Zellerbach, M. R. Higgins, E. M. Mills, J. D. Zellerbach and H. L. Zellerbach, all of whom are active in the directorate of the Zellerbach Paper Company; and of Senator Mark E. Reed, president of the Simpson Logging Company.

All matters pertaining to the issuance of the bonds are subject to the approval of Messrs. Pillsbury, Madison & Sutro, San Francisco.

S. R. Olsen Returns to Fellowship Work

Samuel R. Olsen, chemist at Northwest Paper Company, Cloquet, Minn., has returned to the University of Minnesota, St. Paul, where he has the Forest Products Fellowship in Bio-Chemistry and will continue his research work.

Mr. Olsen is a graduate of St. Olaf College, Northfield, Minn., 1924, and has been doing chemical work at Northwest Paper Company for the past two years.

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

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Conducted by THOS. J. BURKE, C.A., Sec-Treas

"Saveall Savings" *

By W. B. Gery, The Dorr Co., Engineers, New York City

Not many years have passed since the paper industry began to recognize the Save-all as essential and valuable equipment in the paper making process. There is scarcely a mill superintendent nowadays who is not making some attempt at recovering the stock in white water and even though the results may not represent the best that could be obtained, the general progress in the methods of handling white water have been encouraging.

Increased technical efficiency with the consequent attainment of higher yields, and the conservation of natural wood resources, are contributing factors which account for this development. When one considers the fact that to produce four tons of wood pulp, it is necessary to go over an acre of timber land, the efficient conversion of wood pulp to paper becomes of vital importance.

The first step in the right direction, has been taken by most mills, in that they have recognized the economy of recovering the white water stock by installing a Save-all of some sort. Unfortunately a large number of them have stopped right there, by hiding it in some dark, dirty corner of the basement, where nobody even sees it or knows what it is doing. Such installations are worse than none, being in many cases covered with rust and dust, in other words, collectors of dirt, which frequently finds its way back to the paper machine.

On the other hand, many of us are beginning to realize that the Save-all is as much a part of the paper machine as the couch roll, in that the Save-all receives that part of the stock which goes through the wire, whereas the couch roll takes what stays on the wire. The intrinsic value of the stock passing through the wire is the same as that staying on the wire. Up to the time of its arrival at the wire, the fine stock cost just as much to produce as the long stock.

It is true that one would not expect to make a sheet of paper out of the fine stock alone, but there is evidence that the return of this material to the paper machine is beneficial rather than detrimental, as in the case of a number of mills, where, since the installation of efficient save-alls, of the settling type, a decided improvement has been noticed in the formation and finish of the sheet, due to the filling qualities of the returned fine stock. Incidentally, it has been found that returning the recovered stock directly to the machine in the form of settled slush lends itself remarkably well to a uniform furnish due to the fact that as slush it retains the properties it originally had in the stock chest.

It is also absolutely true that fine stock does stay on the machine, and that there is no accumulation or building up of the material in the recovery system. It has as much of a chance of staying on as it does of passing through. Examination of a sample of white water will show that not all of the suspended material is fine stock by any means. The machine is not selective, in that it retains only stock of greater length than the mesh of the wire. Long fibers have as much chance of approaching the wire endways, and there is as much chance for the stock, fine enough to pass the wire, to become enmeshed or trapped among the long fibres, and carried along, as there is for it to pass through the wire.

A scheme, much used in the past, relies on recirculation of the white water in order to trap the stock in that way, if possible. But this method introduces the danger of overflow losses, high pumping costs, and accumulation of dirt.

This brings us to the most vital consideration in the recovery of stock from white water, at any rate for those mills producing high grade papers, and that is the possibility of contamination in the handling of white water. No matter what potential value the white water stock may have when it passes through the wire, regardless of how efficiently it can be recovered and returned to the machine, unless it can be sent back as clean as the stock going into the sheet, it is not fit to be mixed with the feed to the machine, except in the case of the cheaper grades of paper and board.

The greatest danger lies in the possibility of contamination by effluents from drains and sewers, and during washups. Every precaution should be taken to keep the process water separate and entirely free from pollution by other mill flows. The white water is as clean at the time it passes through the wire as the stock that is carried along on the wire into the sheet, and it is the soundest kind of economy to guard it in its travel from the time it leaves the machine as white water, until it is returned to the machine as recovered stock.

Too often Save-alls of inefficient type are used as a clean-up on the tail end of the white water system, rendering the recovered stock, which might be of considerable value, practically worthless, and hardly warranting the expense of recovery.

As an illustration of the value that can be attached to stock recovery and the extreme care exercised in eliminating possibility of contamination, one might cite the case of a mill in Ohio, where the machine pit is tiled, and the piping is of copper. There is probably no other mill in the country where such precautions are taken, but it shows the right idea, and the value of the recovered stock has, no doubt, warranted such measures.

Furthermore, it is obvious that a minimum of handling of the white water reduces the possibility of contamination proportionately.

* Address delivered at Semi-Annual Convention of the Cost Association of the Paper Industry, Holyoke, Mass., Sept. 23, 24 and 25th, 1926.)

A summary, of what, in the writer's opinion, begins to approach the essentials of a satisfactory system for the recovery of white water stock, would stress the following:

1—Keep the machine pit free from contamination and possibility of contamination at all times.

2—Install an efficient type of Save-all.

3—Provide the simplest and most positive direct connection between the paper machine and the Save-all, thereby reducing the possibility of dirt accumulation.

4—Locate the Save-all in a clean, easily accessible place, and be sure that some one checks up on its operation at regular intervals.

5—Aim to reduce the consumption of fresh water. Most mills use more than is necessary. In two mills making the same grade of paper, one is known to use ten gallons of water per minute per ton of paper, whereas the other uses 30 gallons per minute per ton of paper.

6—Educate the operators to regard the Save-all as an indispensible part of the paper machine, just as important in its function as the Fourdrinier is in its part of the paper making process. Every precaution is exercised to prevent dirt from getting on the wire. It is equally important to pay some attention to a system which is capable of saving a single mill five hundred dollars per day, in the value of recovered white water stock. A Dorr installation is actually doing this at the present time.

By operating a Save-all system on this basis, the possibility of contamination will be reduced to a minimum.

Recirculation or use of the clarified water, after practically all of the stock has been removed, is then also feasible.

As an example of the savings that are being effected by an efficient Save-all, actual figures obtained at a number of mills show that where, prior to the installation of this Save-all, the furnishes ranged from 107% to 130% in the various mills; after the installation of this save-all, the furnish in each case was reduced to 103%. In other words, only 103 pounds of paper making material are now required to produce 100 pounds of paper, as against 107 to 130 pounds formerly required. This represents a saving of from four to 27 pounds of stock on every 100 pounds of paper produced.

In a mill producing 100 tons of paper per day, this represents a stock saving of from four to 27 tons of stock per day. Assuming forty dollars per ton as the value of the stock at the machine, these mills are saving from 160 to 1000 dollars per day in stock which was formerly entirely lost or less efficiently recovered. These figures prove that it is possible to come very near to the realization of the rather ambitious slogan "Everything in the Beaters Out on the Paper Reel."

Type of Save-Alls

All Save-alls in present use may be classified under two main headings, depending upon the operating principles, which are "Screening and Filtering" and "Sedimentation or Settling."

Regardless of the principle employed, the object is to effect a Separation of the stock in the white water from the bulk of the water. Varying degrees of efficiency are obtained with the different types, ranging anywhere from 10% over all recovery of the stock to as high as 98%. Some Save-alls are better adapted to the handling of one kind of stock than to another.

The "Screening and Filtering" class may be subdivided into two general classes, viz, Screens and Filters. In each case the object sought is a separation of the stock from the water by means of a porous medium which tends to retain the stock on its surface, while allowing the bulk of the water to pass. Screens may be further subdivided into two classes, viz., Stationary Screens and Rotary Drum Screens.

The filtering or straining medium employed on screens is in all cases a sheet of wire, of varying degrees of mesh. Usually, however, a seventy to eighty mesh wire is employed.

Stationary screens are usually a home-made affair, consisting of an inclined frame with a wire screen stretched across, and over which the main volume of white water flows. In passing over this screen, the coarser portion of the stock is retained on the screen, and rolls down the slope continuously, being collected in a suitable trough at the bottom of the screen, and returned to the stock chest in the form of slush. Screens of this type are at best from 40—60 percent efficient.

In the Rotary Drum Type, the white water is admitted to a tank in which a drum covered with wire screen rotates. As the white water flows against the face of the drum, the coarser stock is retained on the surface, and is continuously removed by a "doctor" at a point above the water level in the tank. The bulk of the water flows to the inside of the drum carrying with it the stock which passed through the screen openings, and leaves the Save-all through a pipe.

The Rotary Screen Save-alls are in general no more efficient than the Inclined Screen type, recoveries rarely exceeding 60% and in many cases falling as low as 20%.

Obviously, a seventy mesh screen can scarcely be expected to retain the bulk of stock, where the concentration of stock in the white water is from three to six pounds per thousand gallons, which is the concentration of the average white water flow.

On the other hand, if the concentration of the stock runs very high, say ten to fifteen pounds per thousand gallons, then the screen is apt to become clogged, with a resulting reduction in capacity.

The Filter type of Save-all like the Rotary Screen type, employs either a drum rotating in a tank, or a series of hollow discs rotating in a tank and mounted on a common shaft. Filters differ from simple screens in that the filtering medium is a more closely woven wire than can be employed on a screen, and suction is resorted to, to accelerate the flow through it by means of a vacuum pump, or by making use of a large falling column of water on the discharge end of the filter, sometimes called a "Barometric Leg."

Filter Save-alls, like Screen Save-alls, will not operate efficiently on a white water of average stock concentration, say three to eight pounds per thousand gallons. To get around this difficulty, they resort to the addition of a certain percentage of long fibre stock to the white water, usually an amount necessary to raise the stock content of the white water to about 18 pounds per thousand gallons or higher. Operating in this way, they are reported to be effecting very fine recoveries. However, it is a matter of opinion whether or not it is good practice to add fresh long stock to the white water, in order to secure more complete recovery of the stock originally in the white water.

In the case of mills making papers of high clay content, Save-alls of both Filter and Screen types are at a disadvantage. It is practically impossible for them to recover the clay with any degree of efficiency, inasmuch as the clay is of such degree of fineness that it will pass through any medium that it is practicable to employ. The limit of the degree of fineness of a filtering medium is that which will not reduce the capacity of the medium to the point of being impracticable.

Sedimentation or settling type Save-alls may be divided into two classes, viz, Intermittent and Continuous.

Intermittent Settlers are simply tanks, usually wooden, into which the white water is run, and kept there until at least the fastest settling portion of the white water stock has settled. The partially clarified water is then decanted, and the settled slush is pumped back to some part of the system.

Obviously, to recover the stock from the whole white water flow of even a small paper mill, a large number of tanks would be required. The more tanks, the more handling, with increased possibility of dirt accumulation.

One sees very few systems of this sort nowadays, for they are undoubtedly inefficient and costly, both from the standpoint of cost of tanks and operation.

At present nearly all mills have some kind of mechanical save-

all, and if it is of the settling type, it is usually continuous in its operation.

By continuous settling is meant, the uninterrupted flow of a liquid carrying solids in suspension through a tank or basin in which sufficient capacity is provided to detain the flow long enough to allow the solids to settle to such a density that the bulk of the solids will be suspended in just a small fraction of the liquid in which it is uniformly suspended on entering the tank; it implies also, that the clarified liquid overflows continuously at the top of the tank at a rate equal to the rate at which the flow enters the tank, but distributed over a much greater area; furthermore, that the settled stock or slush at the bottom of the tank is removed continuously as fast as it settles at that point.

For the separation of any solids from a liquid in which they are suspended by continuous settling, it is necessary to decrease the rate of flow to such an extent that the solids may drop out or sedimentation takes place. This decrease in the rate of flow will be governed by the settling area available, the required area being calculated from the settling characteristics of the stock present in the white water.

It has been found that the settling or clarification capacity of a shallow tank, say three feet deep, is approximately the same as that of a comparatively deep tank in the case of white water and other very dilute dispersions of solids in liquids.

The almost universal adaptability of a continuous settling type Save-all to the recovery of white water stock is evident. Any stock that will settle—and those that do not are rare—can be efficiently recovered in a settling system, except possibly in a case where the volume of flow is very large and the concentration of the stock very low, say less than one pound per thousand gallons. In such a case the size and attendant cost of a system, of sufficient capacity to handle the flow and provide the detention necessary to recover a worth while portion of the stock, may be prohibitive. In an instance of this kind it is usually found that an excessive amount of fresh water is being used, which if reduced, will not only decrease the size of Save-all required, from the standpoint of volume to be handled, but will also raise the stock concentration, thereby making it faster and more completely settleable, and reducing the time of detention necessary.

It is a fact that the higher the stock concentration, the more rapid and complete will be the settling.

For this reason, white water from machines operating on clay papers, lends itself ideally to the sedimentation method of recovery of the stock. White water of this kind usually ranges in concentration from ten to twenty pounds per thousand gallons. A large proportion of this stock is clay, which is usually as valuable as the fibre with which it is mixed. Furthermore, the clay cannot be recovered with any degree of efficiency by methods other than sedimentation.

The presence of clay in the white water stock adds the necessary bulk and weight to make the stock settle rapidly and completely, and it carries down with it fibres which by themselves might be much slower settling.

The Dorr Save-all

The Dorr Save-all is an adaptation of the continuous multi-compartment Settler, which for many years has had a wide use for continuous sedimentation in the mining and chemical industries. While primarily a single tank, the Dorr Save-all is so arranged, with a number of steel diaphragms or trays in a wood tank, that it may be considered as a number of shallow settling tanks or compartments placed one upon the other, and with each compartment equipped with its individual peripheral outlet, but all having a common feed.

The white water is, therefore, fed continuously to the center of the top of the tank and is distributed equally to each compartment from that point. Consequently, the sedimentation of the solids is easy and rapid, and the length of time, therefore, for the deposition on a settling surface is minimized. As the stock settles to a thick consistency it is brought to the center of each compartment by ploughs attached to a slowly revolving central shaft. Final thickening of the stock takes place in the bottom compartment, and the common outlet in the center of the bottom compartment allows the stock to be pumped out continuously at a consistency of from 0.5% to 1%, or from 40 to 100 pounds per thousand gallons, depending on the kind of stock. The clarified water overflows each compartment, and this can be carefully regulated to give a clear discharge by a special overflow control arrangement.

Each compartment is equipped with manholes, and on account of the slightly sloping bottoms, washing out is quickly accomplished. Special rubber squeegees attached to the collecting ploughs keep each compartment thoroughly clean, and prevent any accumulation of stock.

A one horse-power motor is sufficient for power requirements and no operating attention is necessary other than occasional oiling.

A feature that is of particular interest is that on account of the slow speed of the mechanism—about one revolution in ten minutes—repairs or replacements of parts are almost entirely eliminated. Machines have been in operation for several years without any replacement of parts whatsoever.

Operation of the Dorr Save-all

The most feasible operating arrangement will of course depend on local mill conditions. The ultimate aim should be to make the white water system simple and positive, and to eliminate as far as possible, any adjustments of operating conditions.

The volume of the stock returned from the Save-all is usually about 10%—15% of the total volume of white water fed to it, and obviously the location of the Save-all whereby it could receive the flow by gravity, would entail pumping only this smaller volume back to the mixing box of the paper machine or to the beaters. In the event that it is more convenient to locate the Save-all on the same floor as the paper machine, it will be necessary to elevate the white water a distance of 12 feet, or so, to the top of the save-all, but in this case the pumping cost would be partially compensated for by the fact that return of the slush could be made by gravity.

In returning the stock to the operation, it might appear that, as previously explained, the stock which had once gone through the Fourdrinier wires would do so again, that is to say, there is apparent danger in recovering too much of the white water stock. If this were true however, there would be a continual increase or building up in the stock content of the white water fed to the Save-all. It has been found by making careful analyses of the excess white water before starting the Save-all, and at various intervals after it has been in operation, that no such apparent increase from the return of the recovered stock took place. It is apparent therefore, that this recovered stock when returned anywhere in the operation ahead of the paper machine, has the same chance of being incorporated in the finished paper as some of the finer stock which undoubtedly is included in the finished product.

Operating Data From Dorr Save-All Installations

Some operating data taken from an average of several months of operation in representative mills, are as follows:

MILL No. 1—News Specialties—90 tons per day—2 paper machines
Save-alls—$13,500.
White Water Flow to Save-alls—1,500,000 gal. per day.
Recovered Stock—10 tons per day.
Saving—$250 per day over old method.
Amortization—3 months.

MILL No. 2—News Print and News Specialties.
30 tons per day.
2 Paper Machines.
Save-alls—$7000.
White Water Flow to Save-alls—400,000 gal. per day.
Recovered Stock—2 tons per day.
Saving—$70 per day, over old method.
Amortization—4 months.

MILL No. 3—Magazine Paper—40 tons per day.
2 Paper Machines.
Save-alls—$9100.
White Water Flow to Save-alls 860,000 gal. per day.
Recovered Stock and Clay—7 tons per day.
Saving—$200 per day, over old method.
Amortization—2 months.

MILL No. 4.—Newsprint—100 tons per day.
One Paper Machine.
Save-all—$13,500.
White Water Flow to Save-all—1,250,000 gal. per day.
Recovered stock—3.5 tons per day.
Saving—$100 per day, over old method.
Amortization—6.5 months.

MILL No 5.—High Clay Paper—Two paper machines.
Save-alls—$19,000.
White Water Flow to Save-alls—3,000,000 gal. per day.
Recovered Stock—40 tons per day.
Savings—$1000 per day over old method.
Amortization—40 days.

MILL No. 6—High bulking book, Magazine and Tablet.
35 tons per day—one paper machine.
Cost of Save-all $10,500.
White Water Flow to Save-all—1,200,000 gal. per day.
The second day after the Save-all was put into operation, the furnish dropped from the previous consistent figure of 111% to 106%. It has since been reduced to 103%. No further data available.

The following data from the Peerless Division of the Mead Pulp and Paper Company at Dayton, Ohio, appeared on page 464 in the June 1926 Number of "Paper Industry."

Number of Dorr Save-alls—2.
Combined White Water Handled per day—750,000 gal.
Stock in the White Water—23 lbs. per 1000 gal. (bone dry.)
Stock in Clarified Water from Dorr—1.64 lbs. per 1000 gal.
Kind of Stock—20% fiber; 80% filler.
Recovered Stock or Dorr Slush—108 lbs. per 1000 gal.
Clarified Water from Dorr, used in sprays, showers and Jordan head-box.
Weight of Dorr Stock Recovered per day—15,800 pounds.

The Dorr stock is returned to the beaters at the rate of 247 pounds per beater.

Beater furnish—81,000 pounds bone dry per day.

These figures show that $\frac{15{,}800}{81{,}000}$ or 19.5 per cent of the beater furnished is stock recovered by the Dorr Save-alls.

In addition to the fiber saving effected at the mill, above referred to, indirect results showed a noticeable improvement in the finish of the paper and a more closed sheet.

The general results achieved at this mill have been a reduction in clay furnish from 500 pounds per beater to 300 pounds. The clarified water flows by gravity to a clear well equipped with a flat valve, and a 2-inch water line is used for all showers on the paper machine. Water consumption, pumping from wells, has been reduced by 60 per cent, and litigation for stream pollution eliminated.

In conclusion, there is no exaggeration in the statement that a large number of mills are still satisfied to run along with inefficient white water recovery systems.

Very often it happens that a Save-all system which, on the surface, appears to be highly satisfactory, will on careful study and investigation, prove to be otherwise.

The figures and data above noted, taken from actual operations in mills having efficient white water recovery systems will, it is to be hoped, convince even the most skeptical, that it is possible to effect very appreciable savings by the installation of an efficient Save-all system.

Allied Paper Mill Changes

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., October 11, 1926.—George S. Davis, secretary of the Allied Paper Mills, has been advanced to the post of general assistant in all company matters to Alex G. Gilman, president. Announcement is made from the president's office that this action was taken following the resignation of George H. Gerpheide, vice president, to become president of the Hawthorne Paper Company. Mr. Davis is well and favorably known in Michigan paper manufacturing circles. He was connected with the King Paper Company a long period of years as secretary and when that concern was absorbed by the Allied Paper Mills went with the new company in a like capacity.

Other changes made officially are the promotion of Charles A. Yonker from the position of assistant purchasing agent to purchasing agent. Robert R. Milroy, former assistant cost accountant, has been made assistant purchasing agent.

Mr. Gilman reports that the improvements going forward at the various plants are progressing nicely. The new paper washing system at the Monarch has been started and two new Wickes boilers are installed and will be ready for use November 1. Two new rotary or paper cookers have replaced the open type tub cookers at the Bardeen division. One is in use and the other will be ready for operation November 1. These improvements, Mr. Gilman says, tend toward economy as well as a more uniform product.

The rehabilitation of the power plant at the King division, partially put out of commission by the breaking of an engine during the summer months, is progressing satisfactorily.

To Study Forest Fires in Northwest

MADISON, Wis., October 18, 1926.—Dr. L. F. Hawley, of the U. S. Forest Products Laboratory here left recently on a trip to the forests of the West and Northwest in the interest of a chemical study of combustion in forest fires which may be undertaken at the Federal laboratory. Dr. Hawley expects to visit the Northern Rocky Mountain Forest Experiment Station at Missoula, Montana, the Pacific Northwest Forest Experiment Station at Portland, Ore., and the new California Forest Experiment Station a San Francisco, before returning.

The severity of recent fire seasons has intensified the effort to discover the exact conditions favoring and accompanying forest fires and has resulted in a search for refinement of method all along the line of forest fire prevention and suppression.

To Join St. Maurice Paper Sales Corp.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., October 11, 1926.—Raymond Kelly, who resigned recently as sales manager of the Kimberly-Clark Company and vice president of the Cellu-Cotton Products Company, Neenah, Wis., now known as the Kotex Company, will become a paper mill executive in Canada. He has been elected a director and vice president of the St. Maurice Paper Sales Corporation of Montreal. The firm handles the output of several large Canadian mills. Mr. Kelly already is in Canada to start his new work.

W. H. Barnum Returns to Union Twine Co.

[FROM OUR REGULAR CORRESPONDENT]

CLEVELAND, Ohio, October 18, 1926.—W. H. Barnum, formerly connected with the Union Paper and Twine Company, but who has been in other lines for several years, has returned to the Union Paper and Twine Company, as sales manager on fine papers. Barnum is an experienced salesman and is well known to the trade in the Cleveland district.

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International Paper Company — Canadian International Paper Company

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Reduce your Power

Economize on Mill Space

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Los Angeles, Cal.—The National Paper Products Company, San Francisco, Cal., has awarded a general contract to Barrett & Hipp, 918 Harrison street, San Francisco, for the erection of its proposed new plant at Southgate, near Los Angeles. It will be one-story, brick and concrete, totaling about 120,000 sq. ft. of floor space, of which approximately one-half will be equipped for the manufacture of paper boxes and containers; the other portion of the mill will be used for the production of corrugated paper. The entire plant will cost approximately $400,000, with machinery, for which orders will soon be placed. Ellison & Russell, Pacific Building, San Francisco, are engineers; V. D. Simons, Tribune Tower, Chicago, Ill., is consulting engineer. J. D. Zellerbach is vice president and general manager.

West Carrollton, Ohio—The Miami Paper Company is said to have tentative plans under construction for extensions in its mill, to include the construction of a new manufacturing unit. Improvements will also be made in the present plant. Estimates of cost are being made. V. D. Simons, Tribune Tower, 431 North Michigan Avenue, Chicago, Ill., is engineer.

Ashland, Wis.—The Menasha Printing and Carton Company, River Street, Menasha, Wis., will proceed with the construction of its proposed local branch plant, for which a general contract recently was let to the C. R. Meyer & Sons Company, 50 State Street, Oshkosh, Wis. It will be one-story, 78 x 85 ft., equipped with bleeching tanks, pumps and kindred equipment. The structure will cost about $50,000, including machinery.

Nutley, N. J.—George La Monte & Son, 299 Kingsland Road, manufacturers of Special processed papers for bank and kindred service, will proceed with the construction of a new two-story addition to its plant, to be 100 x 100 feet, estimated to cost close to $80,000, with equipment. A portion of the structure will be used for storage service. A general contract for the extension has been let to Henry Doremus & Company, 36 Orange street, Newark. The Fletcher Thompson Company, Bridgeport, Conn., and 415 Lexington avenue, New York, is architect and engineer.

Port Edwards, Wis.—The Nekoosa-Edwards Paper Company has been denied permission by the State Railway Commission, to construct a power dam on Four-Mile Creek in Portage and Wood counties. The company is reported to be planning to secure some other site which will be agreeable to the commission for the proposed installation.

Atlanta, Ga.—The Fox Manufacturing Company, Mears street, near the Bankhead Highway, manufacturer of fibre products is said to have preliminary plans under advisement for the rebuilding of the portion of its plant, destroyed by fire, Oct. 8, with loss estimated in excess of $250,000, including equipment.

San Francisco, Cal.—The Traung Label and Lithograph Company, 962 Battery street, has construction under way on its proposed new paper products plant on South Pacific street, between Battery and Front streets, and plans to have the structure ready for equipment installation at an early date. It is estimated to cost about $165,000, including machinery. A building contract was recently let to the K. E. Parker Company, Clunie Building, San Francisco. Couchot & Rosenwald, San Francisco, are architects.

Rhinelander, Wis.—The Rhinelander Paper Company has selected V. D. Simons, Tribune Tower, 431 North Michigan avenue, Chicago, Ill., engineer, to prepare plans for its proposed mill expansion; estimates of cost will soon be made. As now projected, the work will include a new building and additional equipment.

Burlington, N. C.—The Old Dominion Paper Box Company, 29 Ninth street, Lynchburg, Va., has acquired property at Burlington, consisting of a portion of the building of the Keystone Finishing Mills, Webb avenue, and plans to establish a new branch mill at this location. The quarters will be remodeled and improved and equipment installed at an early date. The estimated cost has not been announced.

Shelton, Wash.—The Rainier Pulp and Paper Company is reported projecting plans for the construction of a new mill, on which work is to proceed at an early date. The company is disposing of a bond issue of $1,300,000, a portion of the proceeds, it is said, to be used for expansion. It is also proposed to sell a stock issue of $960,000 in the near future.

Milwaukee, Wis.—The Leader Card Works, Inc., 376 First avenue, manufacturer of card stocks, etc., will expend about $35,000, for its proposed new plant addition, consisting of a three-story and basement structure, 26 x 140 feet, for which a building contract recently was let to D. B. Danielson, 874 Layton Boulevard. Eschweiler & Eschweiler, 210 Mason street, are architects.

Melbourne, Australia—A local company, operating a plant for the manufacture of paper and paperboard, has plans under way for the construction of a new addition to its mill for considerable increase in output. New machinery will be installed. The project is said to offer opportunity for the sale of American equipment. Full information at the office of the Bureau of Foreign and Domestic Commerce, Washington, D. C., Reference Australia No. 43383; also, at the office of the American Consulate, Melbourne, Julian B. Foster, assistant trade commissioner.

Edmonton, Alta.—The Western Canada Pulp & Paper Company is perfecting plans for the early construction of a proposed new local mill, to be equipped primarily for the conversion of straw into paper stock. It will consist of a main operating unit, reported to cost more than $250,000, with machinery. F. M. McKee is general manager.

New Westminster, B. C.—The Empire Box Company has plans maturing for the rebuilding of the portion of its plant, recently destroyed by fire, for the manufacture of paper boxes, containers, etc. The work will consist practically of an entire new mill, estimated to cost more than $45,000, with equipment. Machinery will soon be purchased. W. N. Martin is one of the heads of the company.

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Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING OCTOBER 23, 1926

SUMMARY

Cigarette paper .....5307 cs.
Wall paper .....127 bls., 47 cs.
Paper hangings .....13 bls., 15 cs.
Wall board .....38 cs.
News print .....325 rolls, 142 bls.
Printing paper .....183 rolls, 127 cs.
Litho paper .....25 cs.
Wrapping paper .....112 rolls, 25 bls., 13 cs.
Packing paper .....135 bls.
Drawing paper .....16 cs.
Filter paper .....44 bls., 85 cs.
Writing paper .....48 cs.
Decalcomania paper .....72 cs.
Tracing paper .....13 cs.
Pergamyn paper .....50 cs.
Cover paper .....18 cs.
Tissue paper .....79 cs.
Surface coated paper .....322 cs.
Metal coated paper .....5 cs.
Gold coated paper .....5 cs.
Basic paper .....100 cs.
Colored paper .....1 cs.
Straw board .....1101 rolls
Miscellaneous paper....2913 rolls, 80 bls., 263 cs.

CIGARETTE PAPER

Standard Products Corp., Rochambeau, Havre, 121 cs.
Standard Products Corp., Vincent, Havre, 100 cs.
R. J. Reynolds Tobacco Co., Vincent, Havre, 100 cs.
Max Spiegel & Son, Chicago, Bordeaux, 17 cs.
The Surbrug Co., Rochambeau, Havre, 18 cs.
The Surbrug Co., Paris, Havre, 20 cs.
R. J. Reynolds Tobacco Co., Collamer, St. Nazaire, 2,560 cs.
De Manduit Paper Corp., Collamer, St. Nazaire, 634 cs.
American Tobacco Co., Collamer, Bordeaux, 1,700 cs.
P. J. Schweitzer, Pres. Polk, Marseilles, 37 cs.

WALL PAPER

Ke'ler-Dorian Paper Co., Mauretania, Southampton, 14 cs.
Wedeman, Godknecht & Lally, A. Ballin, Hamburg, 24 bls.
Bendix Paper Co., A. Ballin, Hamburg, 2 cs.
F. J. Emmerich, Lancastria, London, 15 bls., 2 cs.
A. C. Dodman, Jr., Inc., Minnetonka, London, 2 bls.
A. C. Dodman, Jr., Inc., Franconia, Liverpool, 23 bls.
W. H. S. Lloyd & Co., Franconia, Liverpool, 13 bls.
A. C. Dodman, Jr., Inc., Olympic, Southampton, 50 bls., 2 cs.
A. C. Dodman, Jr., Inc., Aquitania, Southampton, 1 cs.
Kel'er-Dorian Paper Co., Aquitania, Southampton, 26 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Minnetonka, London, 10 bls., 3 cs.
A. C. Dodman, Jr., Inc., Celtic, Liverpool, 3 bls., 1 cs.
Whiting & Patterson Co., Aquitania, Southampton, 11 cs.

WALL BOARD

M. Baxter, Inc., Drottningholm, Gothenburg, 38 cs.

NEWS PRINT

Maurice O'Meara Co., Berlin, Bremen, 142 bls.
A. S. Zabriskie, Berlin, Bremen, 227 rolls.
Box Board Lining Co., Berlin, Bremen, 98 rolls.

PRINTING PAPER

Maurice O'Meara Co., Berlin, Bremen, 83 cs.
Keuffel & Esser Co., A. Ballin, Hamburg, 5 cs., 121 rolls.
E. Dietzgen & Co., Berlin, Bremen, 11 cs.
F. Henjes, Jr., Berlin, Bremen, 62 rolls.
E. Dietzgen & Co., Noordam, Rotterdam, 28 cs.

LITHO PAPER

J. H. & G. B. Siebold, Inc., Malvernian, Shanghai, 10 cs.
McKinley & Co., Malvernian, Shanghai, 15 cs.

WRAPPING PAPER

Bendix Paper Co., A. Ballin, Hamburg, 5 cs.
Okonite Callender Cable Co., Amer. Trader, London, 112 rolls.
Wilkinson Bros. & Co., Inc., Drottningholm, Gothenburg, 25 bls.
E. Dietzgen & Co., Noordam, Rotterdam, 8 cs.

PACKING PAPER

Globe Shipping Co., A. Ballin, Hamburg, 22 bls.
Maurice O'Meara Co., Seydlitz, Hamburg, 113 bls.

DRAWING PAPER

Keuffel & Esser, A. Ballin, Hamburg, 11 cs.
H. Reeve Angel & Co., Inc., Seydlitz, Hamburg, 5 cs.

FILTER PAPER

A. Giese & Son, Chicago, Bordeaux, 18 bls.
C. G. Euler, Chicago, Bordeaux, 26 bls.
C. Schleicher Schull, A. Ballin, Hamburg, 11 cs.
H. Reeve Angel & Co., Inc., Minnetonka, London, 6 cs.
E. Fougera, Olympic, Bordeaux, 68 cs.

WRITING PAPER

Stern Bros., Caracoli, Havre, 10 cs.
J. Kennedy, Rochambeau, Havre, 9 cs.
Coenca Morrison Co., Paris, Havre, 8 cs.
F. C. Strype, Paris, Havre, 5 cs.
Japan Paper Co., Paris, Havre, 16 cs.

DECALCOMANIA PAPER

L. A. Consmiller, A. Ballin, Hamberg, 2 cs.
Phoenix Shipping Co., A. Ballin, Hamburg, 3 cs.
B. F. Drakenfeld & Co., Franconia, Liverpool, 43 cs.
L. A. Consmiller, G. Washington, Bremen, 14 cs.
C. W. Sellers, Columbus, Bremen, 10 cs.

TRACING PAPER

Keuffel & Esser, A. Ballin, Hamburg, 13 cs.

PERGAMYN PAPER

F. C. Strype, A. Ballin, Hamburg, 50 cs.

COVER PAPER

Japan Paper Co., Noordam, Rotterdam, 12 cs.
International Forwarding Co., A. Ballin, Hamburg, 6 cs.

TISSUE PAPER

F. C. Strype, Franconia, Liverpool, 10 cs.
Old Master Paper & Pulp Co., A. Ballin, Hamburg, 69 cs.

SURFACE COATED PAPER

Globe Shipping Co., Berlin, Bremen, 50 cs.
Hensel, Bruckman & Lorbacher, A. Ballin, Hamburg, 3 cs.
The Prager Co., Inc., A. Ballin, Hamburg, 17 cs.
P. C. Zuhlke, Zeeland, Antwerp, 230 cs.
Gevaert Co. of America, Zeeland, Antwerp, 22 cs.

METAL COATED PAPER

Hensel, Bruckman & Lorbacher, Berlin, Bremen, 5 cs.

GOLD COATED PAPER

C. B. Richard & Co., G. Washington, Bremen, 5 cs.

BASIC PAPER

Globe Shipping Co., Zeeland, Antwerp, 100 cs.

COLORED PAPER

Levi Sondheimer & Co., Aquitania, Southampton, 1 cs.

STRAW BOARD

J. P. Heffernan Paper Co., Noordam, Rotterdam, 149 rolls.
Perkins, Goodwin & Co., Noordam, Rotterdam, 134 rolls.
A. Vuyk, Noordam, Rotterdam, 818 rolls.

MISCELLANEOUS PAPER

Japan Paper Co., Duilio, Genoa, 58 cs.
Favor, Ruhl & Co., Duilio, Genoa, 6 cs.
W. Hartman & Co., A. Ballin, Hamburg, 29 bls., 4 cs.
R. W. Granert, A. Ballin, Hamburg, 6 cs.
Perry, Ryer & Co., Caledonia, Glasgow, 65 cs.
F. L. Kramer & Co., Minnetonka, London, 3 cs.
C. H. Boulin, Rochambeau, Havre, 46 cs.
W. H. S. Lloyd & Co., Rochambeau, Havre, 18 bls.
Japan Paper Co., Rochambeau, Havre, 5 cs.
D. S. Walton & Co., Drottningholm, Gothenburg, 1,183 rolls.
Miller Paper Co., Drottningholm, Gothenburg, 302 rolls.
The Borregaard Co., Inc., Drottningholm, Gothenburg, 41 rolls.
Arkell Safety Bag Co., Drottningholm, Gothenburg, 450 rolls.
C. K. MacAlpine & Co., Drottningholm, Gothenburg, 33 bls., 937 rolls, 21 cs.
E. H. Sergeant & Co., Drottningholm, Gothenburg, 6 cs.
Globe Shipping Co., Noordam, Rotterdam, 15 cs.
S. Gilbert, Noordam, Rotterdam, 21 cs.
Kadri Bros., Paris, Havre, 7 cs.

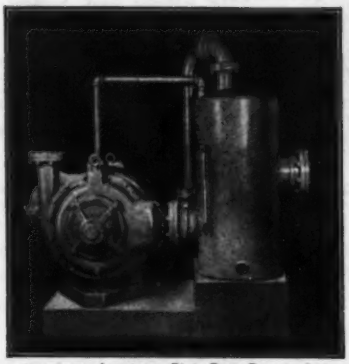
RAGS, BAGGINGS, ETC.

Castle & Overton, Inc., Vincent, Havre, 43 bls. rags.
W. Steck & Co., Vincent, Havre, 59 bls. rags.
V. Galaup, Vincent, Havre, 3 bls. rags.
Irving Bank-Columbia Trust Co., Caracoli, Havre, 13 bls. rags.
Castle & Overton, Inc., Caracoli, Havre, 35 bls. new cuttings.
National City Bank, Caracoli, Havre, 190 bls. rags.
A. W. Fenton, Inc., Caracoli, Havre, 331 bls. rags.
Equitable Trust Co., Caracoli, Havre, 42 bls. rags.
Brown Bros. & Co., Barbadian, London, 297 bls. rags.
Baring Bros. & Co., Barbadian, London, 129 bls. waste paper.
G. M. Graves Co., Barbadian, London, 123 bls. rags.
Castle & Overton, Inc., Fred. VIII, Copenhagen, 280 bls. rags.
Chemical National Bank, Fred. VIII, Copenhagen, 24 bls. rags.
Amsinck, Sonne & Co., Inc., Fred. VIII, Copenhagen, 25 bls. rags.
S. Silberman & Co., Chicago, Bordeaux, 85 bls. rags.
Castle & Overton, Inc., Chicago, Bordeaux, 81 bls. rags.
Amsinck, Sonne & Co., Inc., Chicago, Bordeaux, 35 bls. rags.
A. W. Fenton, Inc., Albert Ballin, Hamburg, 9 bls. rags.
Myers-Lipman Woolstock Co., Lancastria, London, 29 bls. new cuttings.
1st National Bank of Boston, Lancastria, London, 51 bls. rags.
B. D. Kaplan, Lancastria, London, 11 bls. rags.
G. M. Graves Co., Franconia, Liverpool, 78 bls. bagging.
Chatham & Phoenix National Bank, Franconia, Liverpool, 60 bls. bagging.
The Barrett Co., Cabo Villano, Genoa, 57 bls. rags.
Royal Manfg. Co., Cabo Villano, Genoa, 46 bls. cotton waste.
Darmstadt, Scott & Courtney, Cabo Villano, Genoa, 26 bls. cotton waste.
Darmstadt, Scott & Courtney, Cabo Villano, Genoa, 23 bls. bagging.
E. J. Keller Co., Inc., Collamer, Bordeaux, 187 bls. rags.
The Stone Bros. Co., Inc., Collamer, Bordeaux, 4 bls. rags.
Goldman, Sachs & Co., Collamer, Bordeaux, 116 bls. rags.
L. H. Abenheimer, Collamer, Bordeaux, 148 bls. rags.
The Barrett Co., Collamer, Bordeaux, 269 bls. rags.
Albion Trading Co., Collamer, Bordeaux, 3 bls. rags.
Aronow Bros., Collamer, Bordeaux, 9 bls. rags.
Burmon & Bolonsky, Collamer, Bordeaux, 1 ble. rags.
Lipman Woolstock Co., Collamer, Bordeaux, 4 bls. rags.
Capi'ol Woolstock Co., Collamer, Bordeaux, 3 bls. rags.
S. Silberman & Co., Collamer, Bordeaux, 60 bls. rags.
Carolina Bag Co., Noordam, Rotterdam, 14 bls. bagging.
The Barrett Co., Noordam, Rotterdam, 289 bls. rags.
E. J. Keller Co., Inc., Noordam, Rotterdam, 130 bls. rags.
Bulkley, Dunton & Co., Noordam, Rotterdam, 52 bls. bagging.
Robert Blank, Noordam, Rotterdam, 30 bls. rags.
E. J. Keller Co., Inc., Noordam, Amsterdam, 56 bls. bagging.
Atterbury Bros., Inc., Geo. Washington, Bremen, 42 bls. rags.

OLD ROPE

W. Schall & Co., Vincent, Havre, 57 coils.
Brown Bros. & Co., Barbadian, London, 174 coils.

Over 600 mills prefer Jennings



The new Jennings Flat Box Pump, for removing water and air from flat boxes.

Ever since 1914, when the first Jennings Pump for flat box service was installed in the Cumberland Mills of S. D. Warren & Company, an ever-increasing number of plants have insisted on Jennings Pumps for this work. Today Jennings are installed in over 600 mills, and every Jennings is giving the efficient, dependable performance for which Jennings Pumps are noted.

The new Jennings Flat Box Pump is a combination unit, removing both the air and the water. By handling the air independently of the water, a large saving in power is gained, with a proportionate reduction in current.

Be sure to write for the new Jennings Flat Box Pump bulletin.

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Western Representative
Mr. T. H. Savery, Jr., 1524 Republic Bldg., Chicago, Illinois.

Jennings Pumps

Uncle Jake says

The surest way to hold a soft job is to put a lot of hard work into it.

We put a lot of hard work into K. V. P. Bond, but it has paid us in satisfaction and it is paying our customers in the using.

The things in this world that come by chance, go by chance. Hard Work and Know How, constitute a team that is hard to beat. K.V.P. Bond is the printers' delight and his customers' satisfaction.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

Imports of Paper and Paper Stock

(Continued from page 114)

Brown Bros. & Co., Boston City, Bristol, 49 coils.
Anglo-South American Trust Co., C. Villano, Genoa, 42 coils.
Bulkley, Dunton & Co., Noordam, Rotterdam, 25 coils.
E. J. Keller Co., Inc., Minnetonka, London, 58 coils.

MANILA ROPE

Ellermans' Wilson Line, Minnetonka, London, 70 coils.
N. Y. Cordage Co., Zeeland, Antwerp, 55 coils.
Burnhill Co., Olympic, Southampton, 13 pkgs.
N. E. Berzen, Noordam, Rotterdam, 181 bls.

SUNN ROPE

N. Y. Cordage Co., Zeeland, Antwerp, 41 coils.

WOOD PULP

Central National Bank, Fred. VIII, Copenhagen, 750 bls. wood pulp.
Castle & Overton, Inc., Berlin, Bremen, 1,891 bls. wood pulp.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 299 bls. dry soda pulp.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 256 bls. sulphite.
Johanson, Wales & Sparre, Inc., Drottningholm, Gothenburg, 748 bls. dry soda pulp.
Scandinavian Pulp Agency, Inc., Drottningholm, Gothenburg, 254 bls. sulphite.
Scandinavian Pulp Agency, Inc., Drottningholm, Gothenburg, 127 bls. sulphate.
M. Gottesman & Co., Inc., Noordam, Rotterdam, 600 bls. wood pulp.
Buck, Kiaer & Co., Inc., Norefjord, Trondhjem, 1,200 bls. sulphite, 203 tons.
J. Anderson & Co., Birte Jensen, Hernosand, 1,750 bls. sulphate, 350 tons.
J. Anderson & Co., Birte Jensen, Stugsund, 1,150 bls. sulphite, 230 tons.
Bulkley, Dunton & Co., Birte Jensen, Stugsund, 1,625 bls. sulphite, 325 tons.
Bulkley, Dunton & Co., Birte Jensen, Stugsund, 1,000 bls. sulphate, 200 tons.

WOOD PULP WADDING

Birn & Wachenheim, Noordam, Rotterdam, 50 bls.

WOOD FLOUR

The Burnet Co., Fred. VIII, Copenhagen, 204 bags.
A. Kramer & Co., Inc., Noordam, Rotterdam, 500 bags.

CASEIN

Atterbury Bros., Inc., Chicago, Bordeaux, 1,197 bags.
Kalbfleisch Corp., Voltaire, Buenos Aires, 1,334 bags.

BALTIMORE IMPORTS

WEEK ENDING OCTOBER 23, 1926

Baltimore Trust Co., Caracoli, Havre, 165 bls. rags.
National City Bank, Caracoli, Havre, 895 bls. rags.
W. H. Masson, Barbadian, London, 125 bls. old rope.
G. M. Graves Co., Barbadian, London, 107 bls. rags.
F. J. Cuse, Barbadian, London, 239 bls. old rope.
E. J. Keller Co., Inc., Binnendyk, Karlsruhe, 1,051 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING OCTOBER 23, 1926

E. J. Keller Co., Inc., Western Ally, Antwerp, 191 bls. bagging.

PHILADELPHIA IMPORTS

WEEK ENDING OCTOBER 23, 1926

L. H. Abenheimer, Vincent, Havre, 86 bls. rags.
E. J. Keller Co., Inc., Vincent, Havre, 145 bls. rags.
Bulkley, Dunton & Co., Vincent, Havre, 191 bls. rags.
The Stone Bros. Co., Inc., Vincent, Havre, 311 bls. rags.
J. M. Jaffe, Vincent, Havre, 30 bls. rags.
Bulkley, Dunton & Co., Caracoli, Havre, 225 bls. rags.
Castle & Overton, Inc., Caracoli, Havre, 518 bls. rags.
National Bank of Commerce, Caracoli, Havre, 148 bls. rags.
Chase National Bank, Caracoli, Havre, 82 bls. rags.
Phila. Girard Natl. Bank, Caracoli, Havre, 330 bls. rags.
Bank of Manhattan Co., Caracoli, Havre, 370 bls. rags.
Anglo-South American Trust Co., Caracoli, Havre, 187 bls. rags.
Chase National Bank, Caracoli, Havre, 44 bls. rags.
Chase National Bank, Caracoli, Havre, 60 coils old rope.
A. Hurst & Co., Caracoli, Havre, 66 bls. rags.
State Bank, Caracoli, Havre, 87 bls. rags.
W. Bryor, Caracoli, Havre, 6 cs. writing paper.
D. I. Murphy, Winona, Constantinople, 1,082 bls. rags.
E. J. Keller Co., Inc., Collamer, St. Nazaire, 431 bls. rags.
The Stone Bros. Co., Collamer, Bordeaux, 309 bls. rags.
State Bank, Collamer, Bordeaux, 18 bls. rags.
Robert Blank, Collamer, Bordeaux, 330 bls. rags.
E. J. Keller Co., Inc., London Exchange, London, 220 bls. rags.
Castle & Overton, Inc., Tomalva, Antwerp, 430 bls. rags.
Castle & Overton, Inc., Louvain, Antwerp, 202 bls. rags.
Castle & Overton, Inc., Burgerdyk, Rotterdam, 43 bls. rags.
Castle & Overton, Inc., ——, Rotterdam, 164 bls. rags.
Castle & Overton, Inc., ——, Germany, 10 bls. rags.
Castle & Overton, Inc., Glasgow Maru, Germany, 39 bls. rags.

BOSTON IMPORTS

WEEK ENDING OCTOBER 23, 1926

Crocker Burbank Co., Barbadian, London, 487 bls. waste paper.
Equitable Trust Co., Birte Jensen, Hernosand, 6,966 bls. sulphate, 1,161 tons.
J. Anderson & Co., Birte Jensen, Hernosand, 2,400 bls. sulphite, 400 tons.
J. Anderson & Co., Birte Jensen, Hernosand, 2,000 bls. sulphate, 400 tons.
Pagel, Horton & Co., Inc., Birte Jensen, Hernosand, 600 bls. sulphite, 100 tons.
Pagel, Horton & Co., Inc., Birte Jensen, Wallvik, 3,600 bls. sulphite, 600 tons.
Price & Pierce, Ltd., Birte Jensen, Wallvik, 9,030 bls. sulphite, 1,505 tons.
J. Anderson & Co., Birte Jensen, Stugsund, 500 bls. sulphite, 100 tons.
Bulkley, Dunton & Co., Birte Jensen, Stugsund, 2,125 bls. sulphite, 425 tons.
Bulkley, Dunton & Co., Birte Jensen, Stugsund, 625 bls. sulphate, 125 tons.

Kalamazoo Cost Div. Meets

The Kalamazoo Division of the Cost Association of the Paper Industry held a successful meeting at the Country Club, at Three Rivers, Mich., on September 29, 1926, with an attendance of about fifty, from the mills in that vicinity.

An address on "The Reduction of Waste in the Paper Industry" was given by Paul Ulrich, of the Eddy Paper Corporation, Three Rivers, Mich.

The meeting was also addressed by H. G. Crockett, of Scovell, Wellington & Co., New York City, who spoke on the subject of "Standard Costs."

It is expected that this division will hold regular monthly meetings during the next six months, and all mills interested are invited to write to the Secretary of the Kalamazoo Division, Harry G. Bradford, of the Rex Paper Company, Kalamazoo, Mich., if they desire to be placed on the mailing list and notified of all future meetings.

Huge Lumber Merger Planned

The *Vancouver Daily Province* publishes the following:

"Merger of the timber interests and plants of several of the largest British Columbia saw milling concerns into a giant syndicate—the deal involving $400,000,000—is forecast in negotiations which are under way in Vancouver. It is said to be one of the biggest mergers ever attempted in the lumber industry in the Pacific northwest. Leading British Columbia mills have been invited to join the amalgamation which includes many plants and timber holdings in Washington and Oregon.

"Several of the larger British Columbia mills are favorably inclined, according to reports, and it is stated that from 25 to 33 per cent of the industry is likely, eventually, to accept the terms offered by the purchasing syndicate.

"One company operating four plants on the lower mainland and Vancouver Island, is said to have decided on a sale and two other large concerns are showing a disposition to follow suit."

Manitoba Mill Nearly Ready

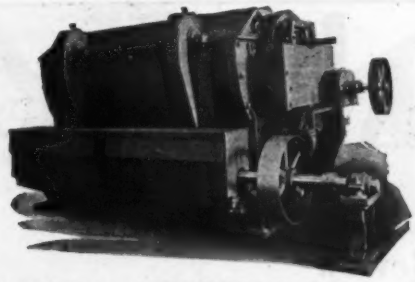
[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., October 25, 1926.—It is expected that the Manitoba Pulp and Paper Company's mill at Fort Alexander, Man., will commence the production of paper next month. The town has already taken on a settled appearance, 45 houses already being erected and in use, in addition to the two large staff houses. About 30,000 cords of wood are piled near the mill and in the booms ready for the start.

To Be Gen. Mgr. of Western Paper Converting Co.

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., October 29, 1926.—Lloyd Riches, recently sales manager of the Western Paper and Converting Company of Salem, Ore., has been promoted to general manager of the company. This plant specializes in glassine products, but among other things ships one and one-half cars of adding machine paper each month to distributing centers over the entire country.



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Read what one of our satisfied users says:

Gentlemen:

We have now had your Screen in operation for about two months, and our opinion of this screen is such that we are contemplating further installation. Please make us a proposition on four more.

Yours truly,
Name of Mill on Request

The Moore & White Co.

Est. 1885

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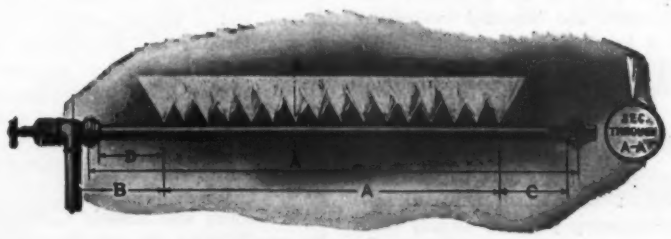

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THE SMITH & WINCHESTER MFG. CO.

SOUTH WINDHAM, CONN.

ESTABLISHED 1828

A Complete Line of Paper Bag Making Machinery

BUILDERS OF DEPENDABLE MACHINERY FOR THE PAPER MILL

The Undercut Trimmer

Die Cutting Presses

New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, October 27, 1926.

During the past week, the demand for the various grades of paper was well maintained, and the local paper market continued to exhibit a strong tendency. Prices are holding up to schedule in a satisfactory manner and there is little talk of shading. An excellent number of inquiries are said to be in the market for future business and the general outlook is decidedly promising. Orders are coming in to the headquarters of the leading paper houses in good volume, and the respective sales forces may be relied upon to put forth their best efforts to surpass previous records before the close of 1926.

Demand for news print continues heavy and accumulations are being absorbed readily. The leading news print interests have decided that there is nothing to warrant any change in the contract price of $65 per ton, which has prevailed since the beginning of the present year. The industry will accordingly retain this quotation on contract orders during the forthcoming year.

Consumption of box board is expanding and production has been accellerated to cope with the increased demand. Prices remain fairly steady. The tone of the fine paper market is improving and tissues are in better request. Greater activity prevails in the coarse paper market and wrapping paper is moving into consumption at an excellent pace.

Mechanical Pulp

Conditions in the ground wood market are practically unchanged. Demand for both domestic and imported mechanical pulp is normal and production is keeping ahead of consumption at a sufficient rate to take care of all immediate needs. Prices are holding up to previously quoted levels and reports of shading are infrequent.

Chemical Pulp

The chemical pulp market continues in a strong position. It is reported that fifty-five per cent of the Swedish output of sulphate and kraft pulp for the forthcoming year has already been disposed of. According to information received from Norway by the News Print Service Bureau, the pulp and paper mill strike in that country was settled on the following terms:

"The parties agreed to have the dispute settled by a court of arbitration, consisting of five men. The employers and the labor union each appointed one member to this board and the government the remaining three. The board decided on a reduction in wages of 15 per cent to 17 per cent. Due to the present uncertainty caused by the fluctuations in the Norwegian exchange, the agreement is binding only until March 15, 1927, instead of a full year, as has been customary in the past. The decision virtually amounts to a victory for the workers, as they were willing to accept this reduction at the outset."

Old Rope and Bagging

The demand for old rope from the paper mills has been rather light of late, and the market remains in an easy position. An improved request is anticipated in the near future, however, as a result of the lower quotations prevailing. All grades of bagging are in better demand, and prices are holding up to recent levels, in most instances.

Rags

Some improvement has been noticed in the domestic rag market. While the demand for the higher grades of rags is still rather slow, there is a steadily expanding call for lower and medium cuttings. Prices are holding up in a satisfactory manner, taking everything into consideration. A better feeling is also developing for imported rags and the future outlook is more promising than for some time.

Waste Paper

Higher grades of waste paper are in somewhat better request and quotations are fairly steady. Demand for the lower grades is about normal for this time of the year. The number of inquiries in the market on account of future business is encouraging, and business should be brisk from now until the close of the year, at least.

Twine

Most of the business transacted in the twine market during the past week was along routine lines. The industry is considered to be in a good position for the season of the year and a general expansion of trade is believed to be due in the immediatefuture, according to many competent observers.

J. R. Coburn Dies at Watertown

WATERTOWN, N. Y., October 26, 1926.—John R. Coburn of Detroit and a former resident of Cathage, died at the Mercy hospital October 16. Mr. Coburn came east from Detroit three months ago and while here was stricken with a severe attack of chronic stomach trouble from which he had suffered for the past year. He was taken ill at the home of his brother-in-law, George W. Ryan, No. 245 Stone street. Last Thursday he was taken to the hospital for observation and his condition grew rapidly worse.

Mr. Coburn was born in Carthage, June 26, 1870, the son of the late William M. and Harriet Middleton Coburn Bruce of Carthage. He was educated in the public schools of Carthage and the Hudson River Institute, from which he was graduated.

During his residence in Carthage Mr. Coburn was a well known paper mill owner and business man. With the late James A. Cutterson and the late James Newton of Carthage, he organized and built the Newton Falls Paper Company. He severed his connections with the Newton Falls Paper Company in 1898 and bought an interest in the Island Paper Company of Carthage in the same year.

He was associated with Peter Yousey and Maxwell Augustus in the ownership and management of the Island mill. He disposed of his interests in the Island Paper Company in 1905 and the company was acquired by Charles Pratt of Carthage.

Since leaving the paper mill industry, Mr. Coburn had been in the bond business conducting a company in his own name in New York since 1905 except for the past eight years when he has been located in Detroit, Mich.

A Lewellen Transmission driving a large coating machine, in the plant of the Philip Carey Mfg. Co.

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Diamond Alkalies include

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Modified Sodas

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Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, October 27, 1926.

Business in the local chemical market during the past week continued along fairly satisfactory lines. Leading manufacturers have announced the retention of the contract prices that had applied on numerous basic items, including bleaching powder, caustic soda, chlorine and soda ash, during the current year, for the 1927 contract period. This decision has imparted a degree of stability to the local situation that had heretofore been somewhat lacking.

BLANC FIXE.—The undertone of the blanc fixe market is steady and a good volume of business is being transacted at the present time. Prices of both the pulp and the powder are holding up very well. The pulp is quoted at $60 per ton, in bulk, and the powder is selling at from 4¼ cents to 4½ cents a pound, in barrels, at works.

BLEACHING POWDER.—Considerable interest is developing in forward shipments of bleaching powder, since the announcement of the continuance of the present quotations during the forthcoming year. Stocks in hand are about sufficient to take care of prevailing requirements. Bleaching powder is quoted at from $2 to $2.40 per 100 pounds, in large drums, at works, according to quantity and size of container.

CASEIN.—Domestic casein is somewhat easier, but no alterations in spot prices have been recorded. The quotation on the imported grade, however, has declined half a cent per pound. Domestic casein is offered at from 15½ cents to 18 cents a pound, while imported casein is now quoted at from 16 to 17 cents a pound, all in bags.

CAUSTIC SODA.—Contract withdrawals of caustic soda were heavy during the past week. Consumption of this product is expanding. The spot market is becoming more active and prices remain unchanged at the recently quoted levels. Caustic soda is offered at from $3.10 to $3.15 per 100 pounds, in large drums, at works. Spot car lots are quoted at from $3.20 to $3.25 per 100 pounds.

CHINA CLAY.—Demand for china clay shows some signs of improvement. Shipments against contract are proceeding at an excellent pace. Prices are practically unchanged. Imported China clay is still quoted at from $13 to $22 a ton, in bulk, ship side. Domestic washed clay is offered at from $8 to $9 a ton, at mine, and pulverized at $10 a ton.

CHLORINE.—The chlorine market is in a very sound condition. Contracts are now being made for deliveries during the early part of next year at the quotations that have prevailed for some time past. Chlorine is quoted at 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders, and at 4¼ to 4½ cents a pound on spot business.

ROSIN.—Easier conditions have been experienced in the rosin market recently. Prices have declined still further, although quotations will undoubtedly become firmer following any sudden buying movement. At the naval stores, the grades of rosin mostly used in the paper mills are now selling at from $13.50 to $13.60 per 280 pounds, ex dock, in barrels.

SALT CAKE.—Steadiness continues to prevail in the salt cake market. The demand for this product is most persistent and with offerings decidedly limited, prices remain very firm. In some quarters, the practicability of advanced prices for the forthcoming year is being discussed. Salt cake is at present quoted at from $18 to $20 a ton, in bulk, at works.

SODA ASH.—A considerable volume of contract business for early 1927 was reported during the week, following the announcement of the retention of the present schedule of prices for next year. Shipments against standing contracts were very large. Contract quotations, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.25; in bags, $1.38; and in barrels, $1.63.

STARCH.—No radical changes were reported in the starch market during the past week. Business continued along active lines and supplies are moving into consumption in excellent volume. Special paper makers' starch is selling at $3.42 per 100 pounds, in bags, and at $3.59 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Consumers of sulphate of alumina are showing more interest in the market, and contracts are being made for delivery next year at the current price level. Commercial grades of sulphate of alumina are quoted at from $1.40 to $1.45, in bags, at works, in car lots. The iron free is quoted at from $2 to $2.05 per 100 pounds, at works.

SULPHUR.—The condition of the sulphur market is sound. Contract withdrawals are moving in good volume. Prices remain unchanged at the previously quoted level. Inquiries being received denote improvement in the situation in the near future. Sulphur is selling at from $18 to $19 a ton, in bulk, at mine, and at from $21 to $23 a ton, ship side.

TALC.—Demand for talc from the paper mills is about normal for the time of the year. Shipments against contract are moving into consumption at a steady pace. Quotations are practically unchanged and reports of concessions are infrequent. Domestic talc is still offered at from $16 to $18 a ton, at eastern mines, while French talc is quoted at from $18 to $22 a ton, ship side.

Bids and Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., October 26, 1926.—The Government Printing Office has received bids for 42,400 pounds of 25x38—160 of double coated book paper, from R. P. Andrews Paper Co., at 19.25 cents per pound; and Allied Paper Mills, at 13.69 cents.

Bids were also received for 4,020 pounds of 38x48—134, blue M.F. printing paper from Mathers-Lamm Paper Company, at 8.7 cents per pound; and Old Dominion Paper Company, at 8.6 cents.

The following papers awards have just been made public by the Government Printing Office.

The R. P. Andrews Paper Company will furnish 10,000 pounds (10,000 sheets) of 26x38—No. 50 strawboard at $61.50 per ton, bids for which were received on October 11.

The Allied Paper Mills will furnish 31,400 pounds (100,000 sheets) of 41x52—314, of single coated book paper at 8.09 cents per pound and Reese & Reese will furnish 5,000 pounds of kraft wrapping paper in 11½ inch rolls, at 5.45 cents per pound. Bids for these items were received on October 8.

The Mathers-Lamm Paper Company will furnish 45,000 pounds (53,300 sheets) of various sizes chip board at 1.8365 cents per pound, bids for which were received on October 1.

The Allied Paper Mills will also furnish 40,350 pounds (150,000 sheets) of 38x48—269, single coated book paper at 8.09 cents per pound and the Whitaker Paper Company will furnish 10,000 pounds of No. 2 kraft wrapping paper in 36 inch rolls at 5.23 cents per pound. Bids for these two items were received on September 24.

The American Writing Paper Company will furnish 7,100 pounds of white bond passport paper cut 26x34 at 36.89 per pound, bids for which were received on September 15.

Barton, Duer & Koch Paper Company will furnish 16,875 pounds (47,363 sheets) of 26x42, white rope drumhead paper at 19.74 cents per pound, bids for which were received in September, and the Whitaker Paper Company will furnish 3,000 pounds (10,000 sheets) of 17x28—303 manila cardboard at $68.00 per ton, bids for which were received on August 27.

Wayagamack Co. Splits Stock

MONTREAL, Que., October 25, 1926.—The Wayagamack Pulp and Paper Company has announced that on surrender of their common share certificates on December 1 next, the shareholders will receive two shares of nominal or no par value for each $100 par value share held at present. There being outstanding $5,000,000, or 50,000 shares, of capital stock, the company will have 100,000 shares outstanding when this exchange is made effective.